

Fig. 1A

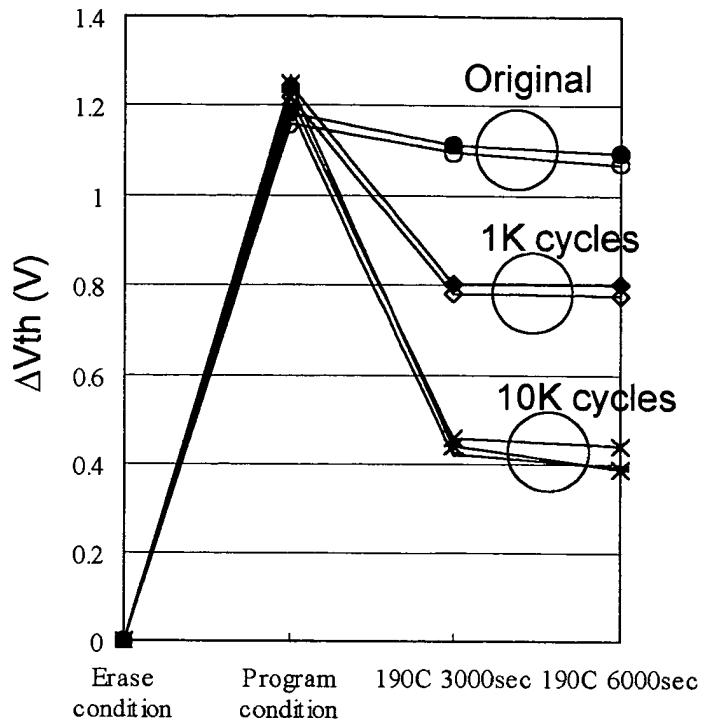


Fig. 1

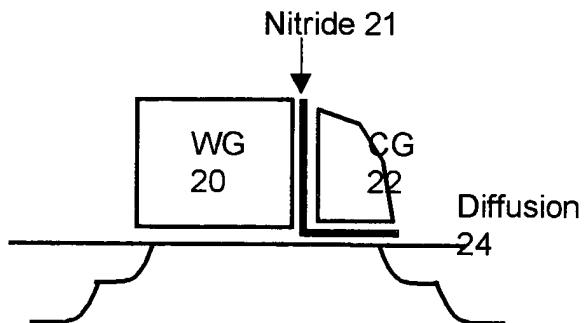


Fig. 2

Prior Art

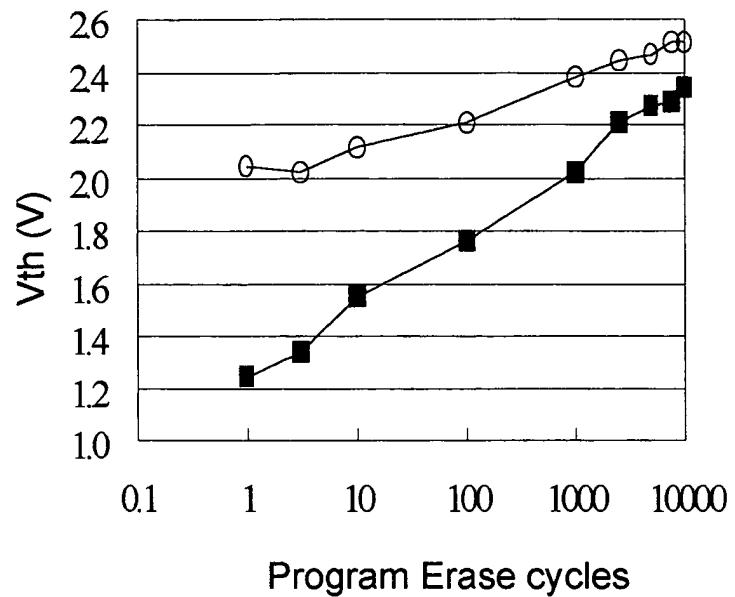


Fig.3

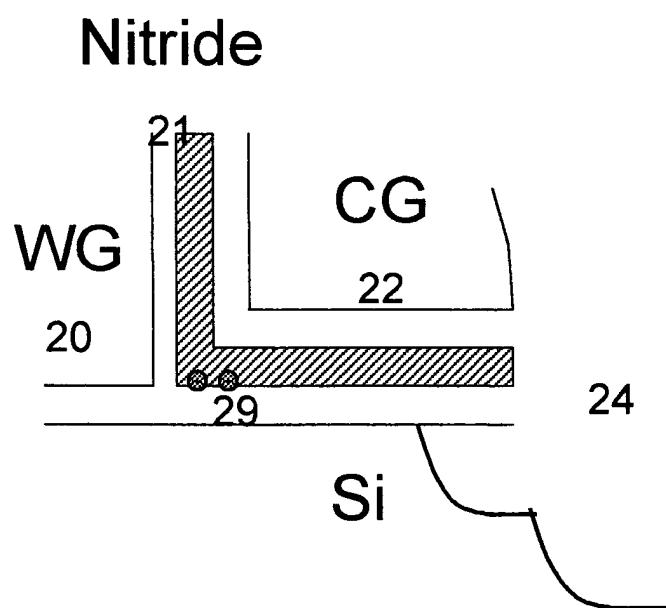


Fig.4

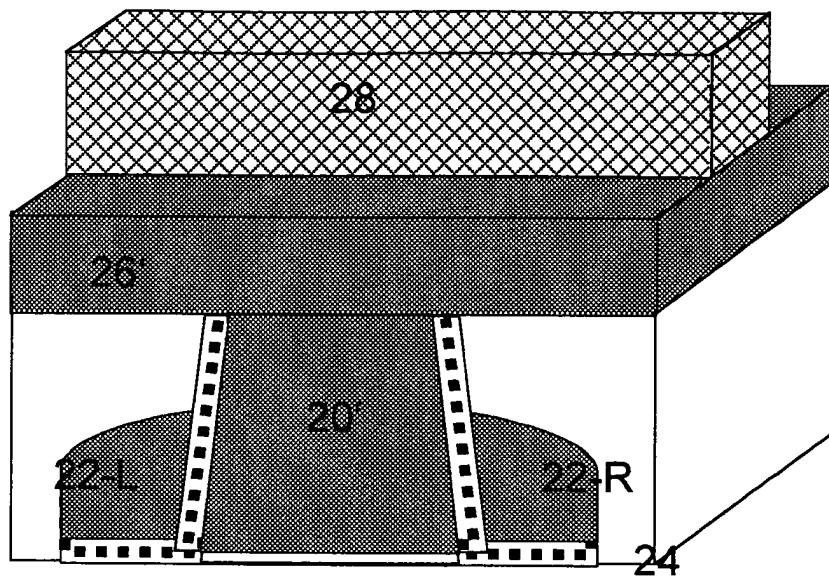


Fig.5A

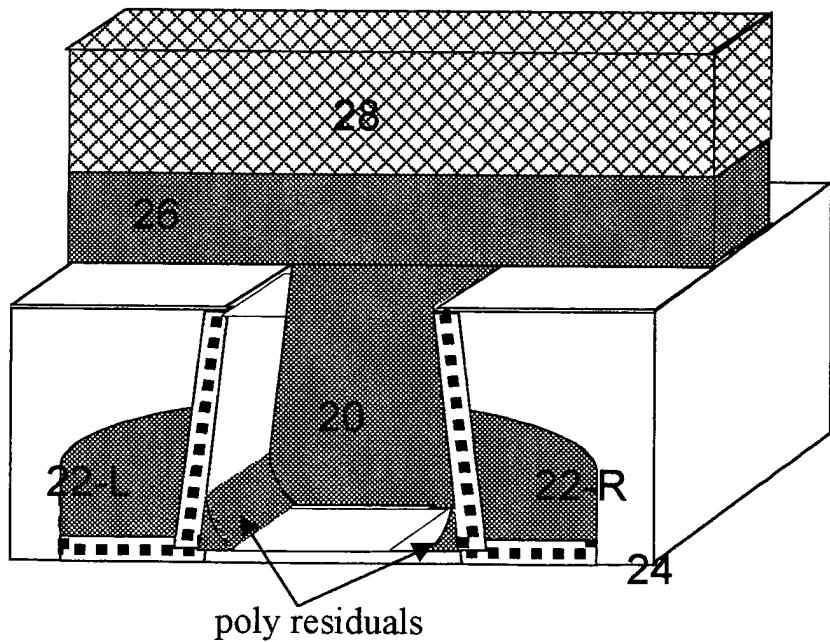


Fig.5B

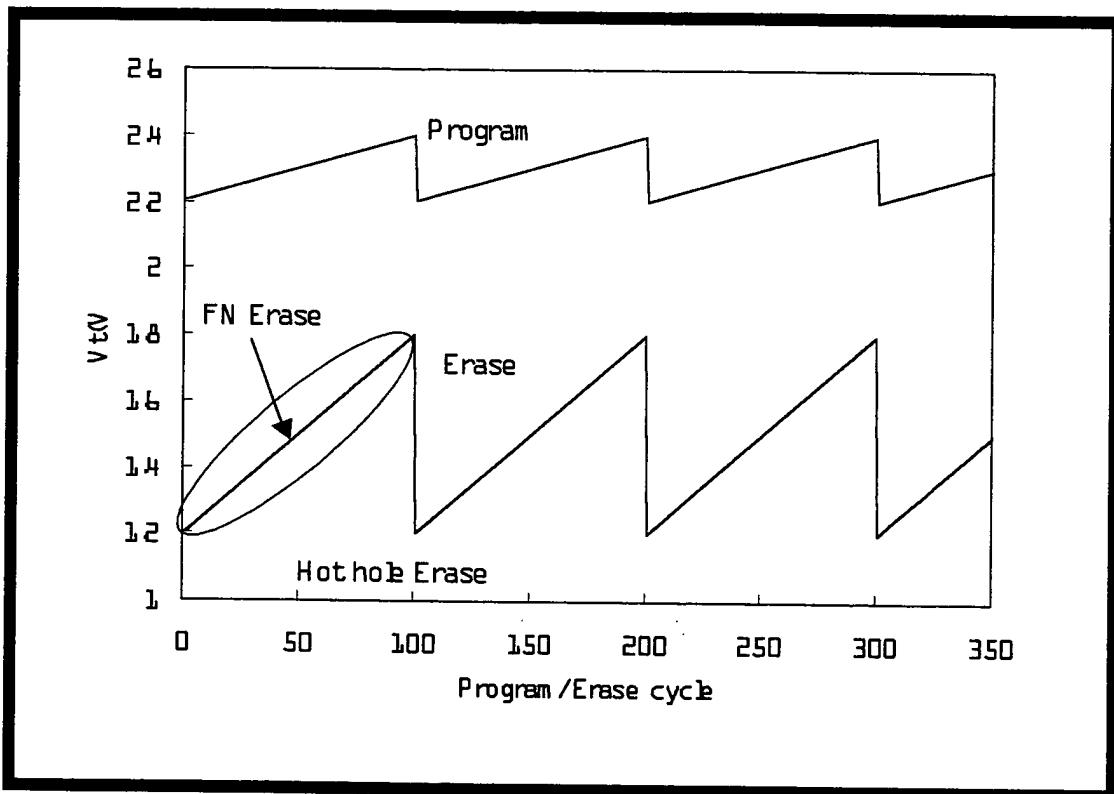


Fig.6

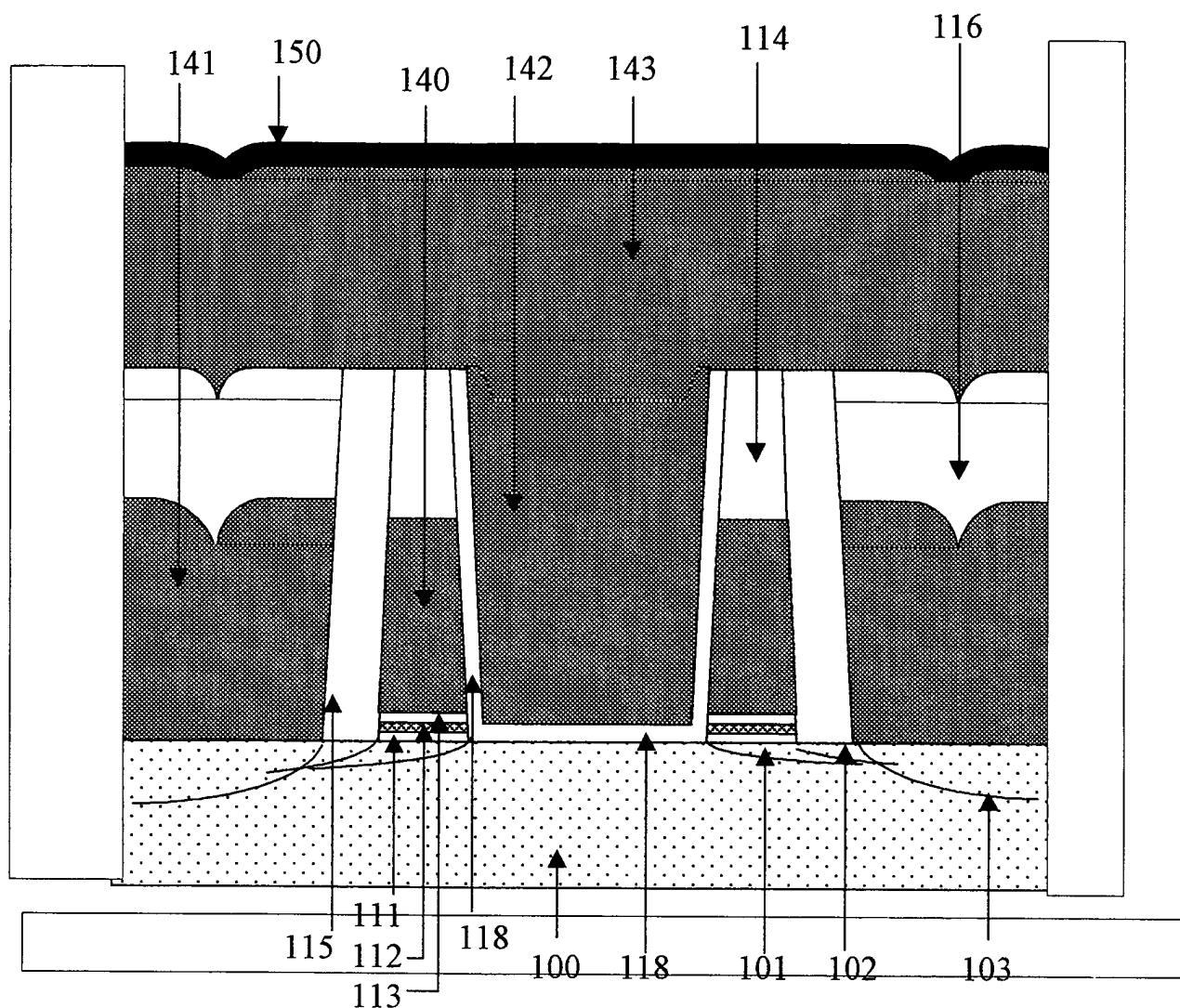


Fig.7

| | | |
|--------------------------|----------------------|------------------------------|
| 100 Substrate | 111 ONO Bottom oxide | 140 Control Gate Poly Si |
| 101 Control Gate Channel | 112 ONO Nitride | 141 Raised Diffusion Poly Si |
| 102 Memory LDD | 113 ONO Top oxide | 142 Word gate |
| 103 Memory diffusion | 114 CG Oxide Mask | 143 Word Line |
| | 115 Memory Spacer | 150 Word Line Salicide |
| | 116 Recess Oxide | |
| | 117 CG-WG isolation | |
| | 118 Word Gate Oxide | |

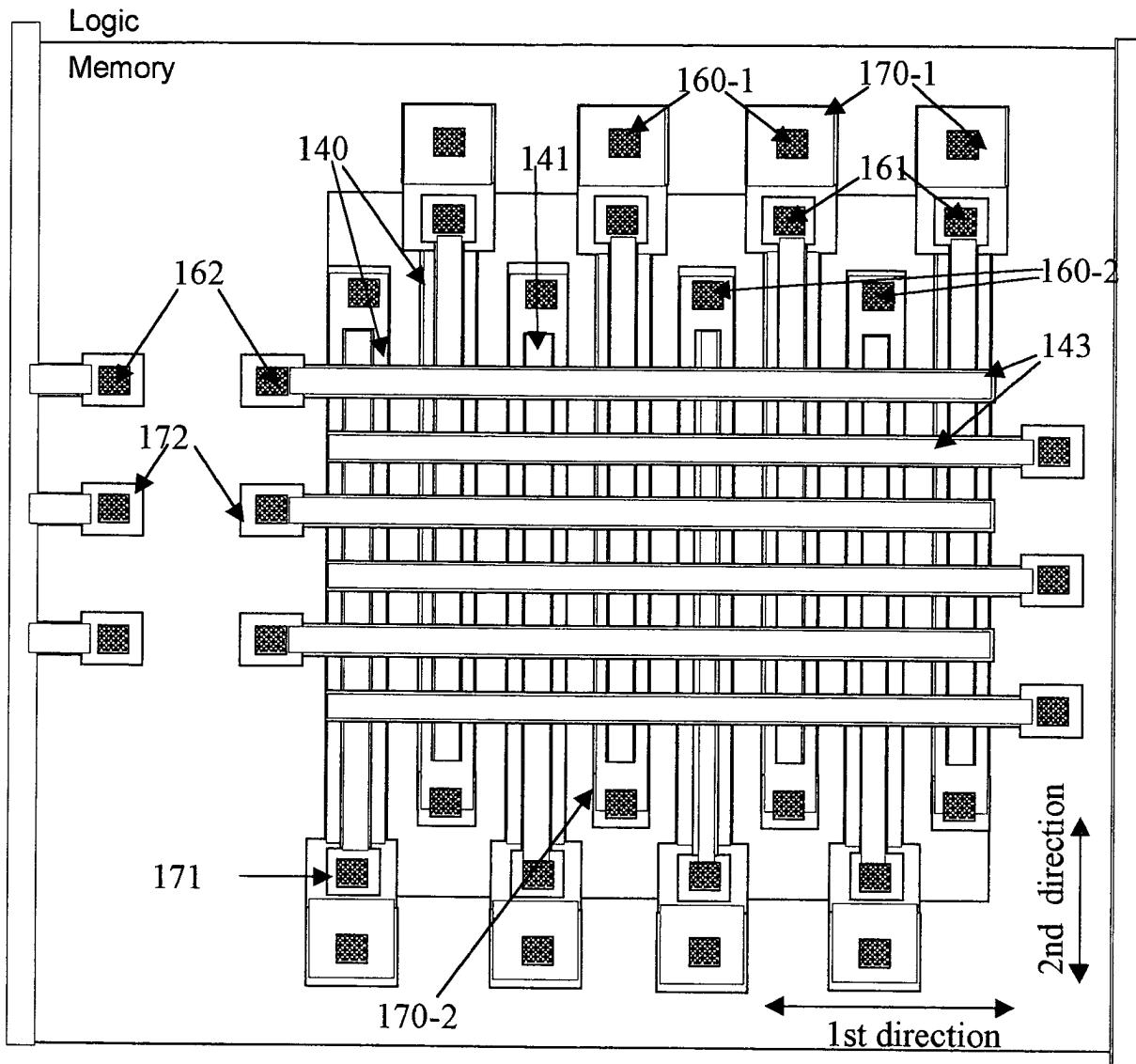


Fig.8

160-1 Control Gate Contact type 1
 160-2 Control Gate Contact type 2
 161 Bit line (Diffusion) Contact
 162 Word line Contact

170-1 Control Gate Contact type 1 Cover
 170-2 Control Gate Contact type 2 Cover
 171 Bit line (Diffusion) Contact Cover
 172 Word line Contact Cover

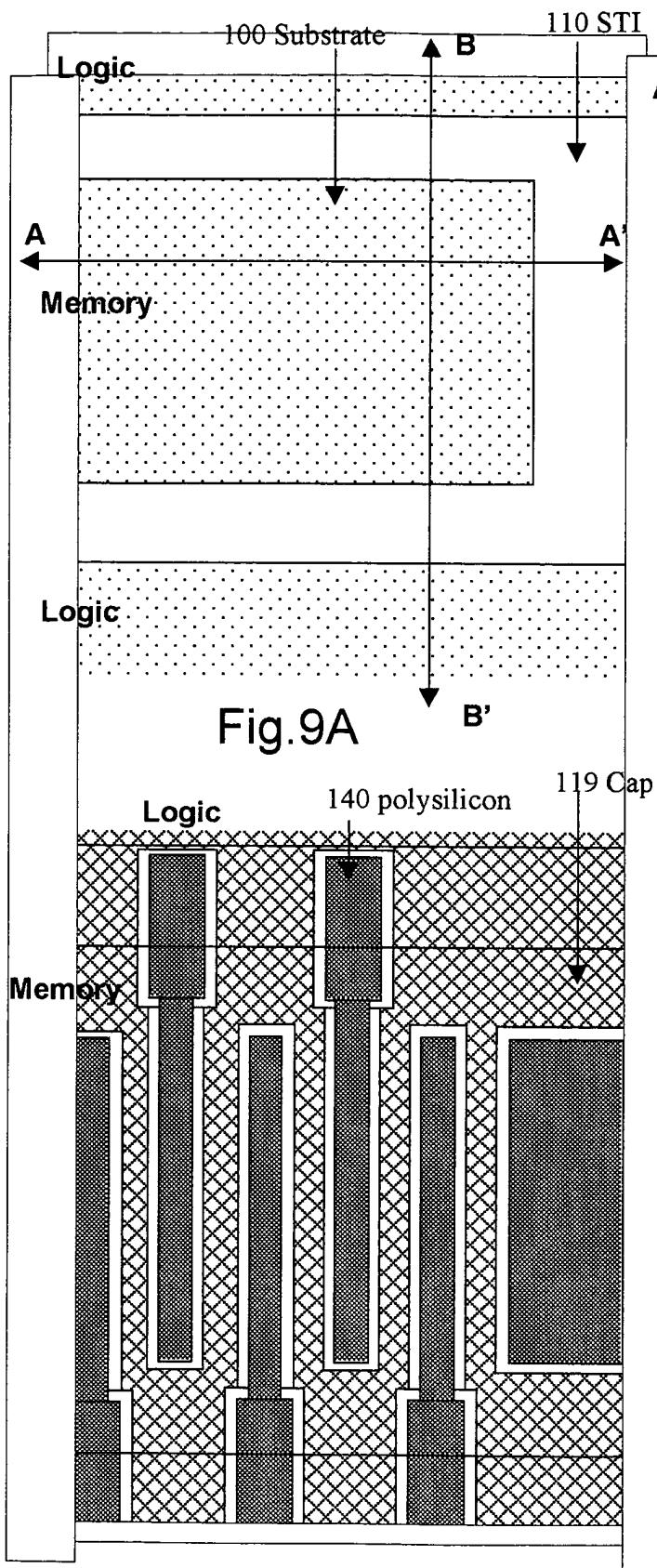


Fig.9A

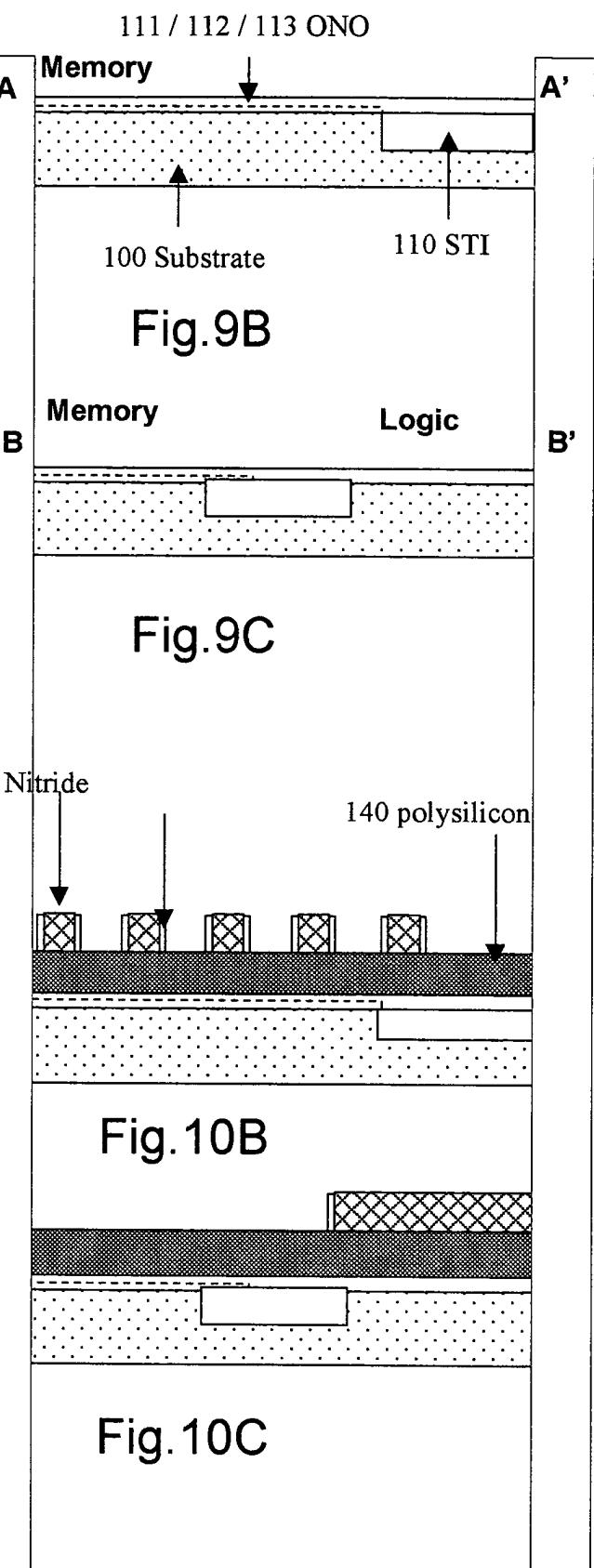


Fig.9B

Fig.9C

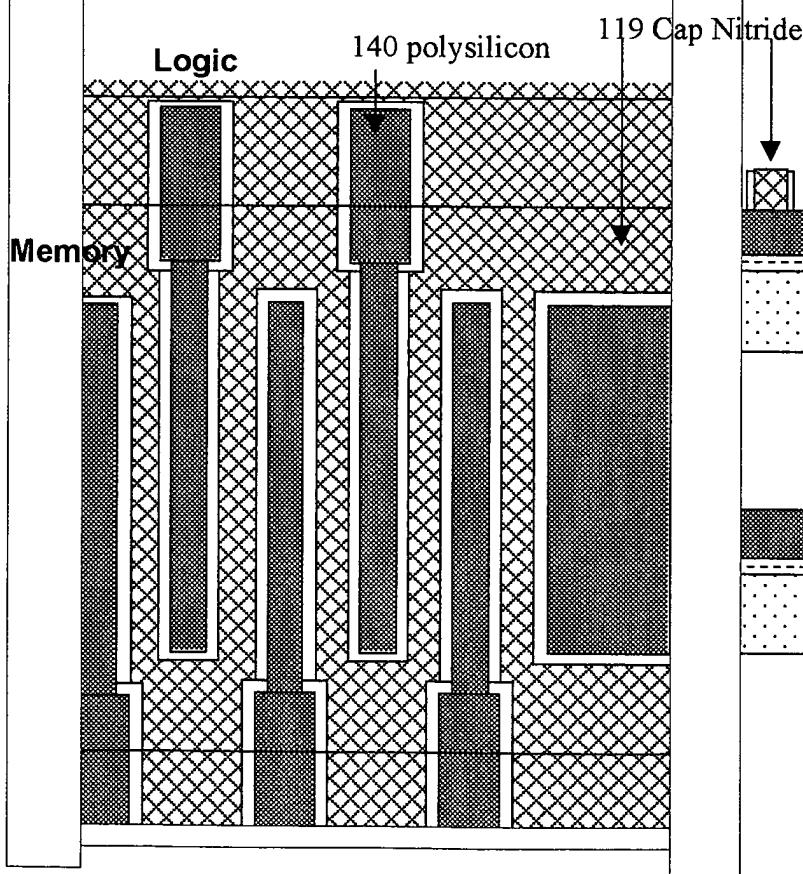


Fig.10A

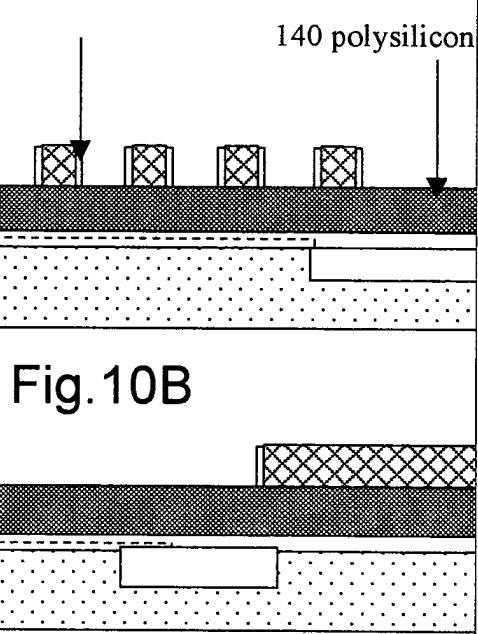
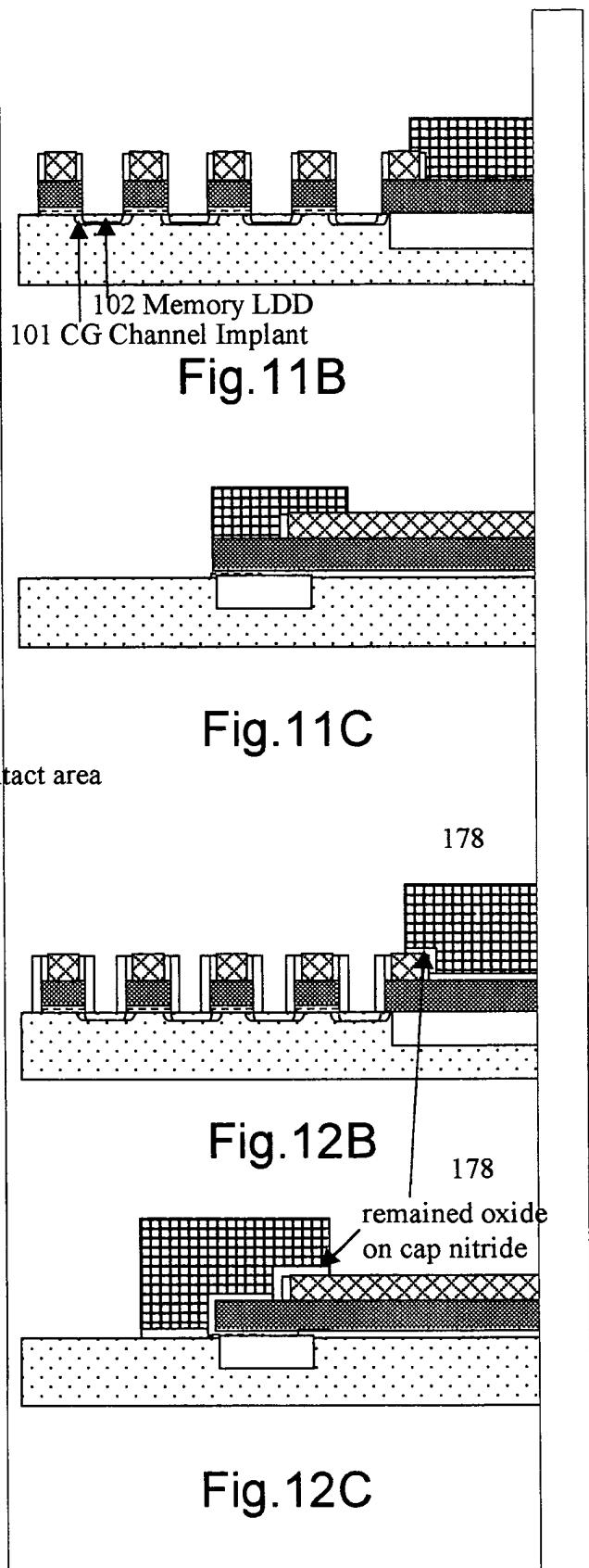
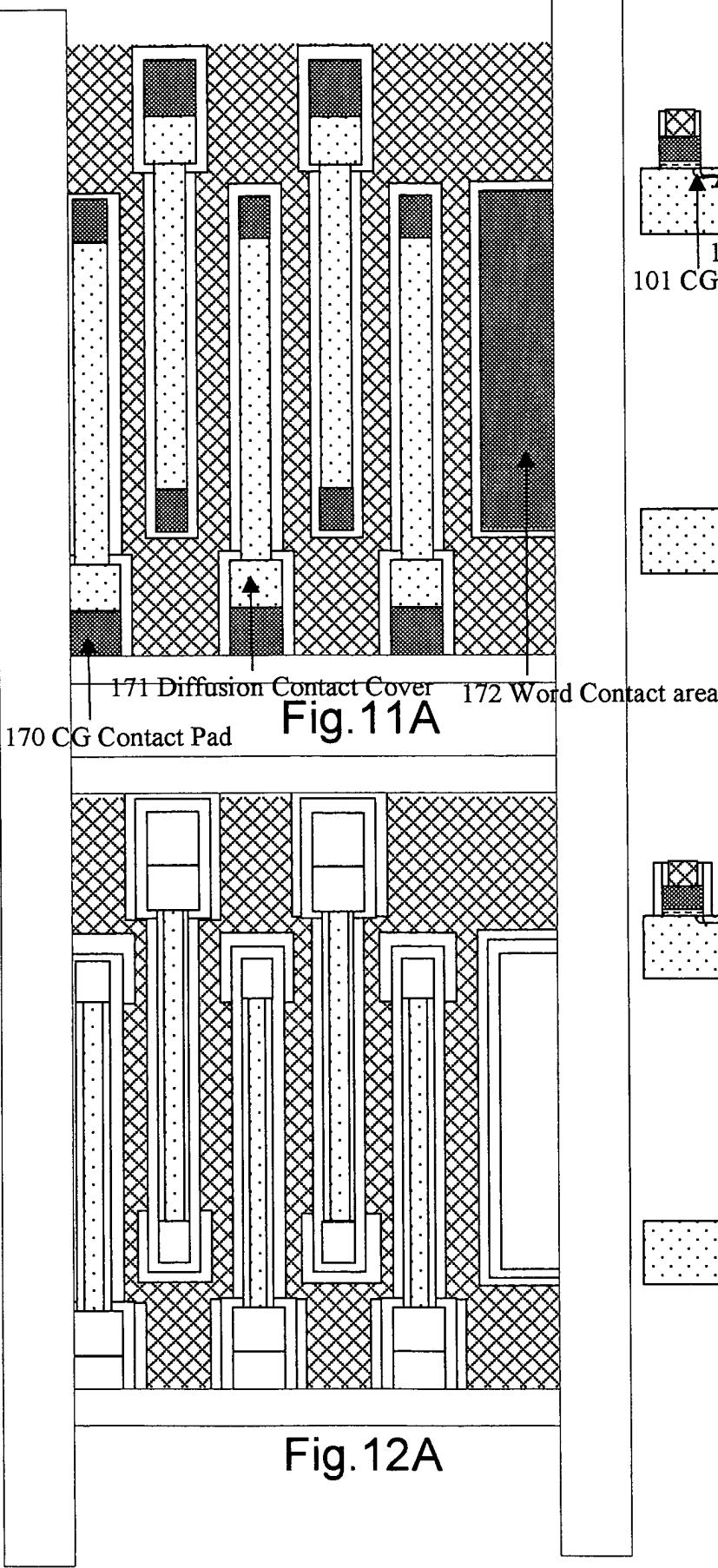


Fig.10B

Fig.10C



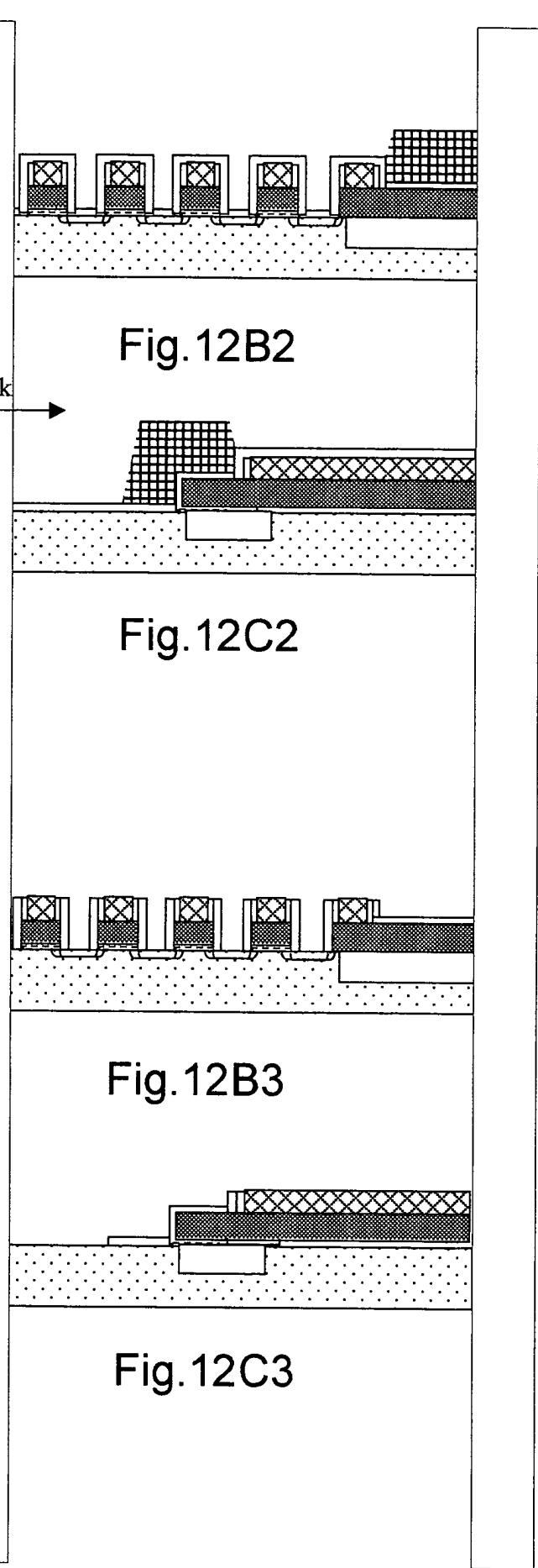
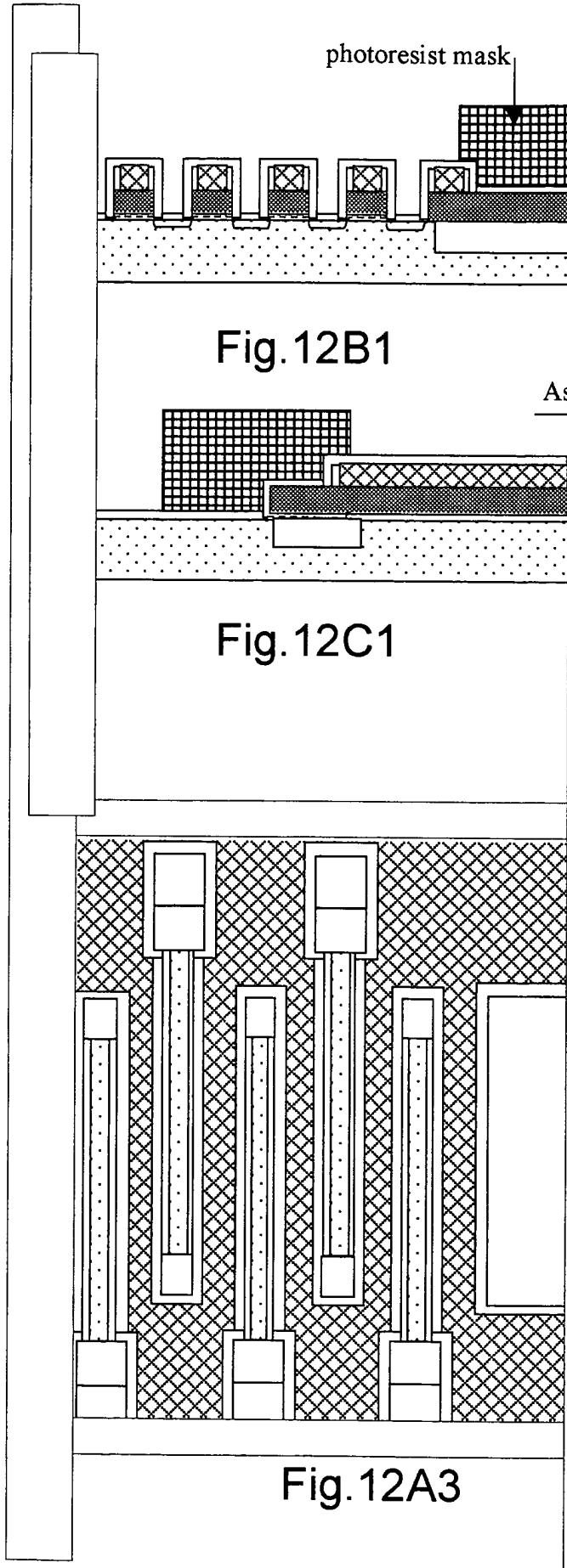


Fig.12A3

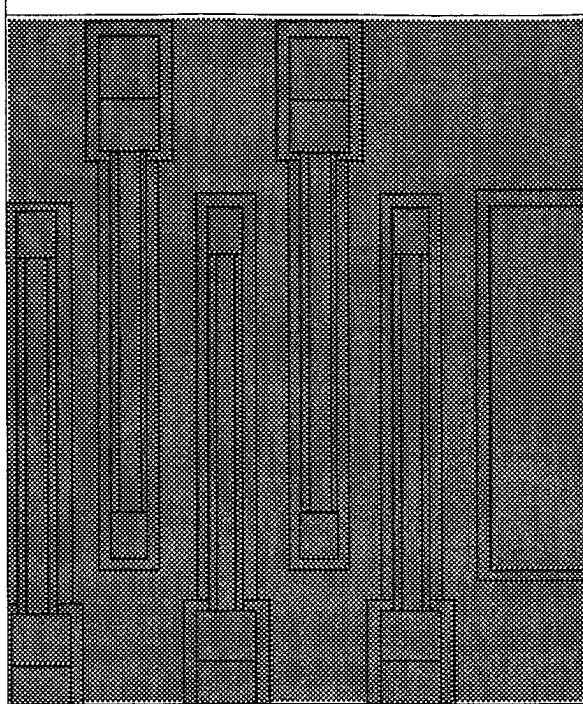


Fig.13A

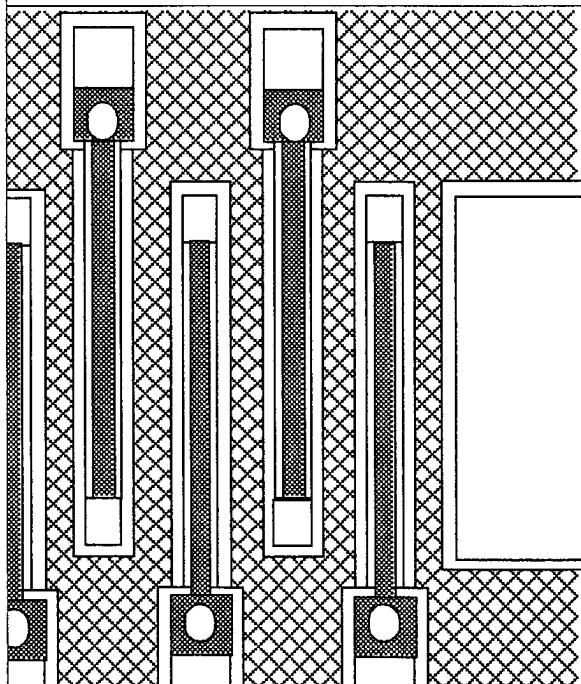
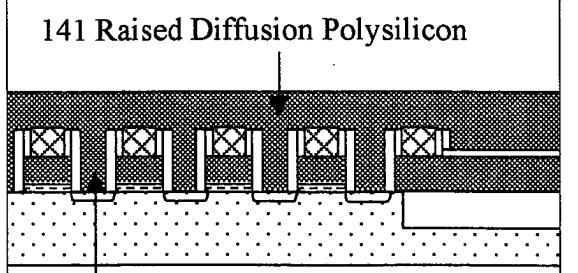


Fig.14A



180 Diffusion Trench

Fig.13B

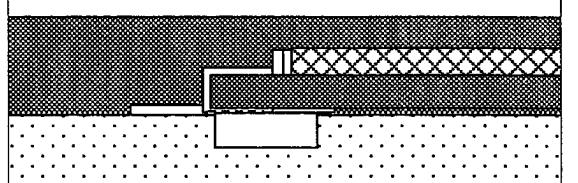


Fig.13C

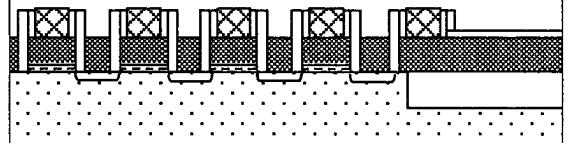


Fig.14B

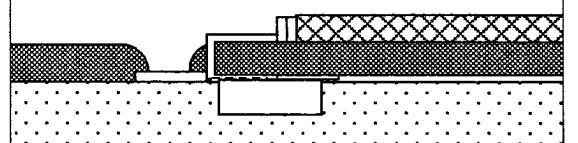


Fig.14C

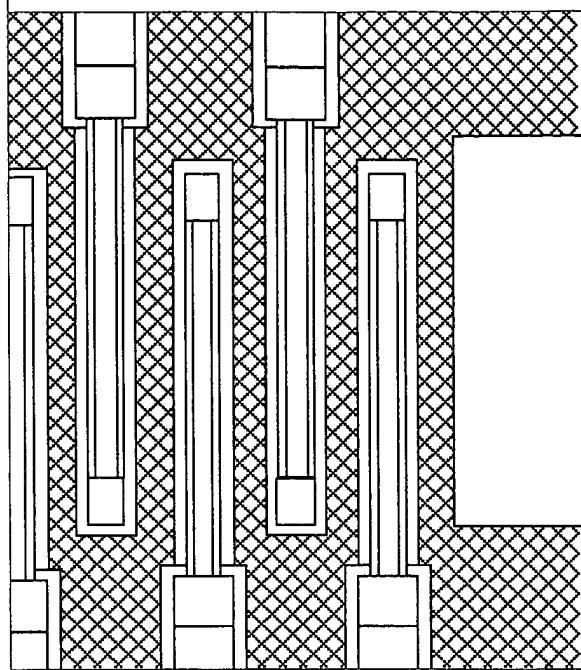


Fig.15A

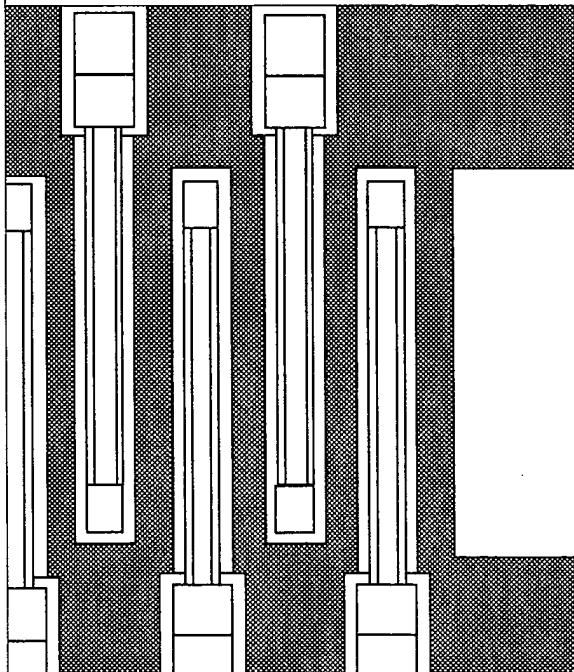


Fig.16A

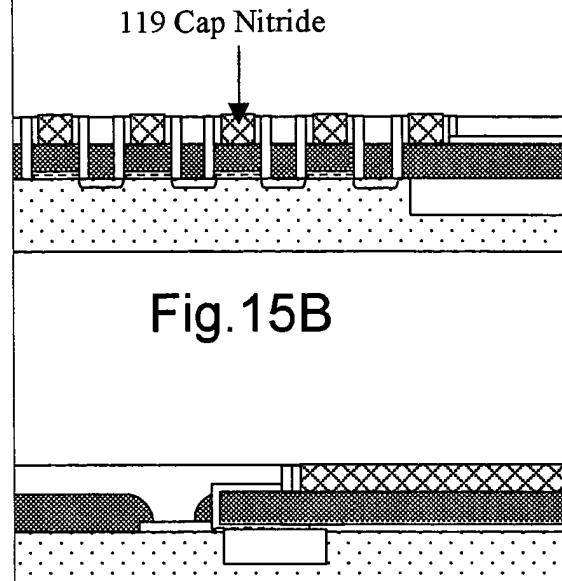


Fig.15B

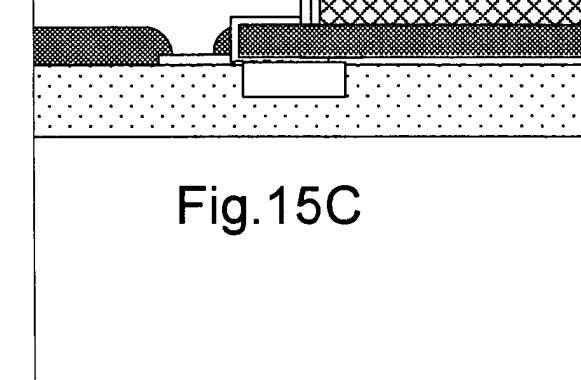


Fig.15C

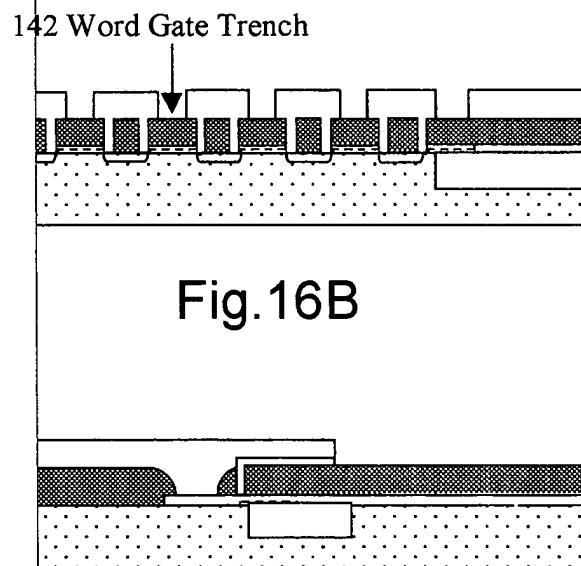


Fig.16B

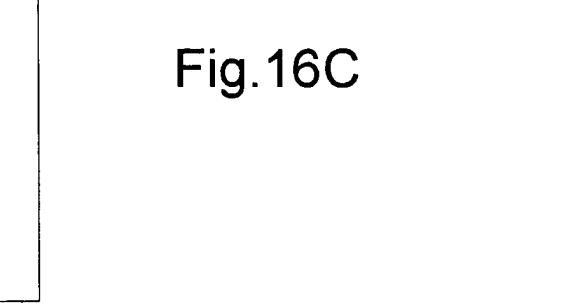
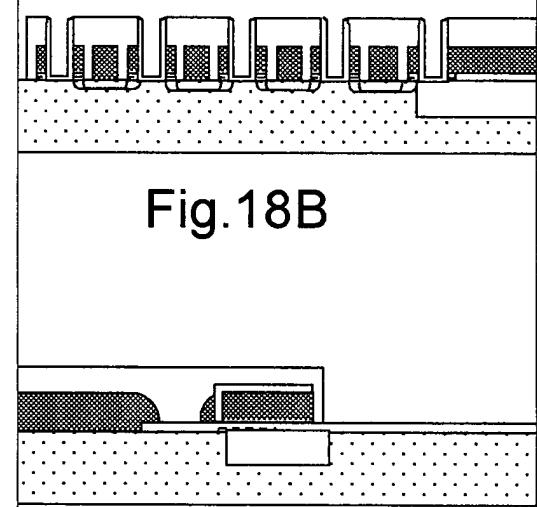
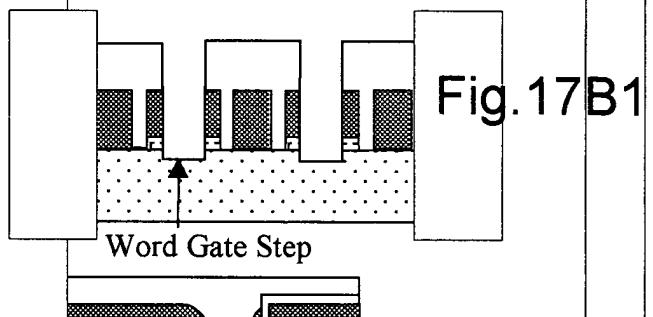
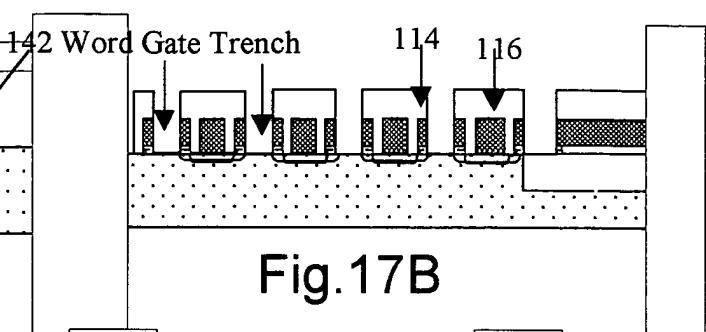
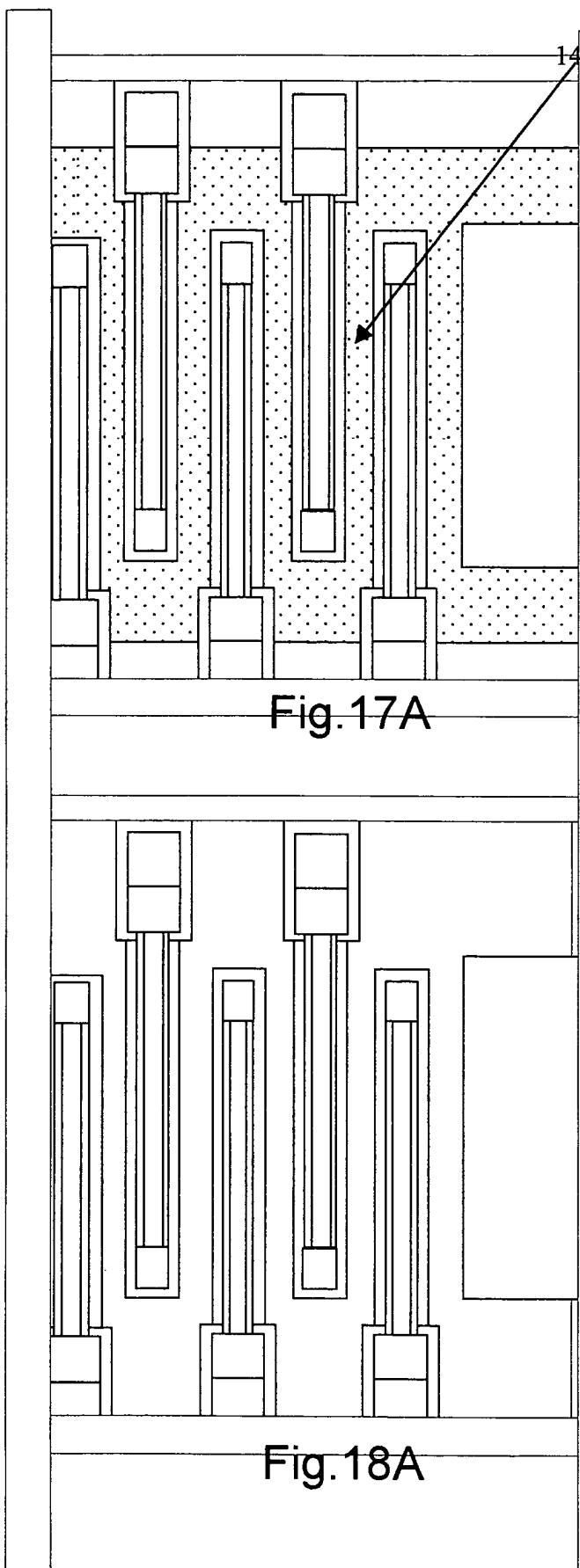


Fig.16C



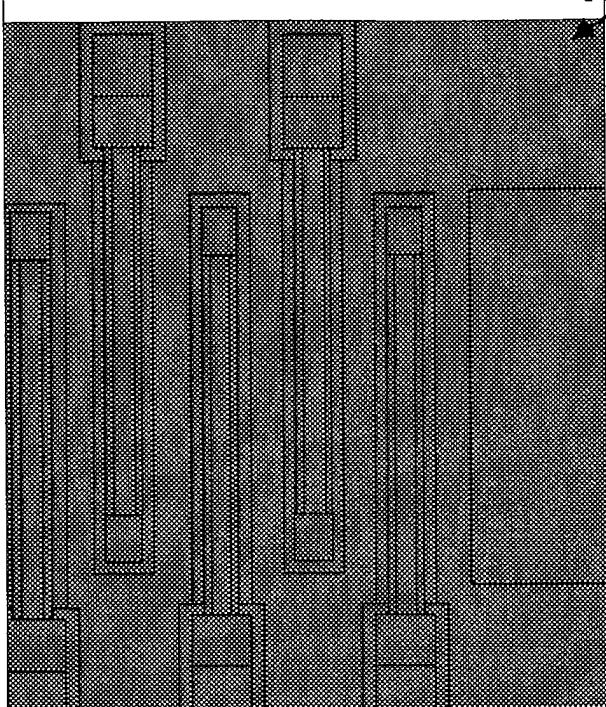
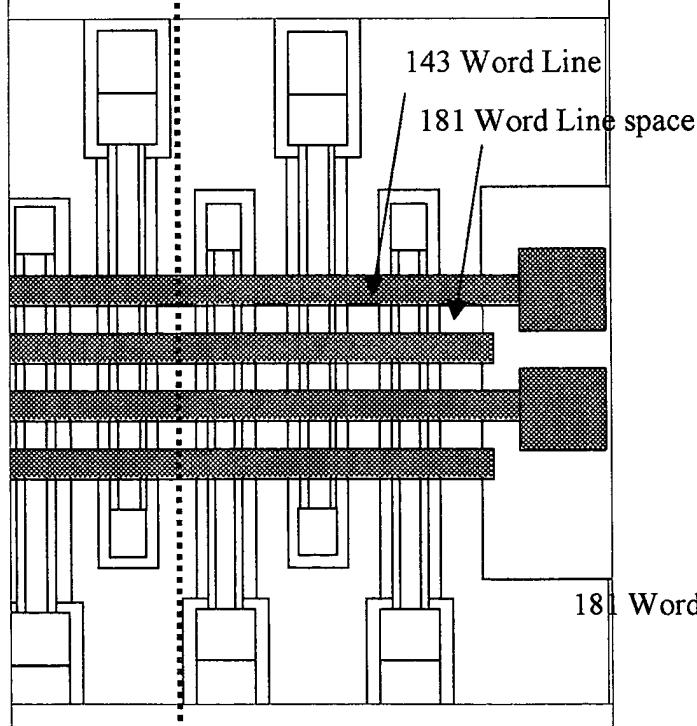


Fig.19A

C



C'

Fig.20A

143 Word Line polysilicon

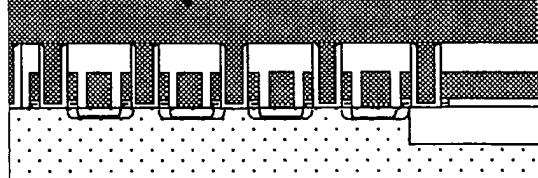


Fig.19B

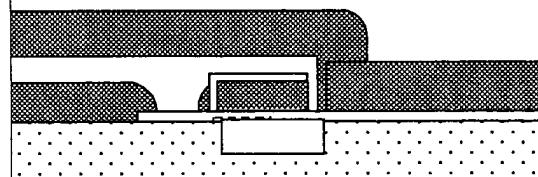


Fig.19C

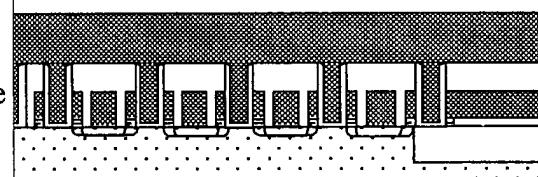
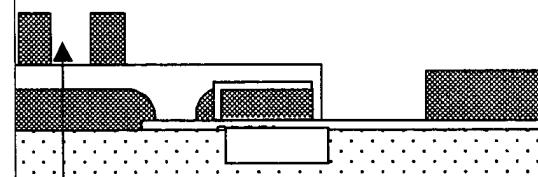


Fig.20B



181 Word Line space Fig.20C

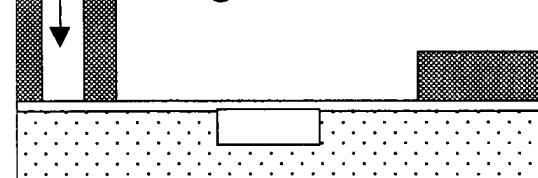
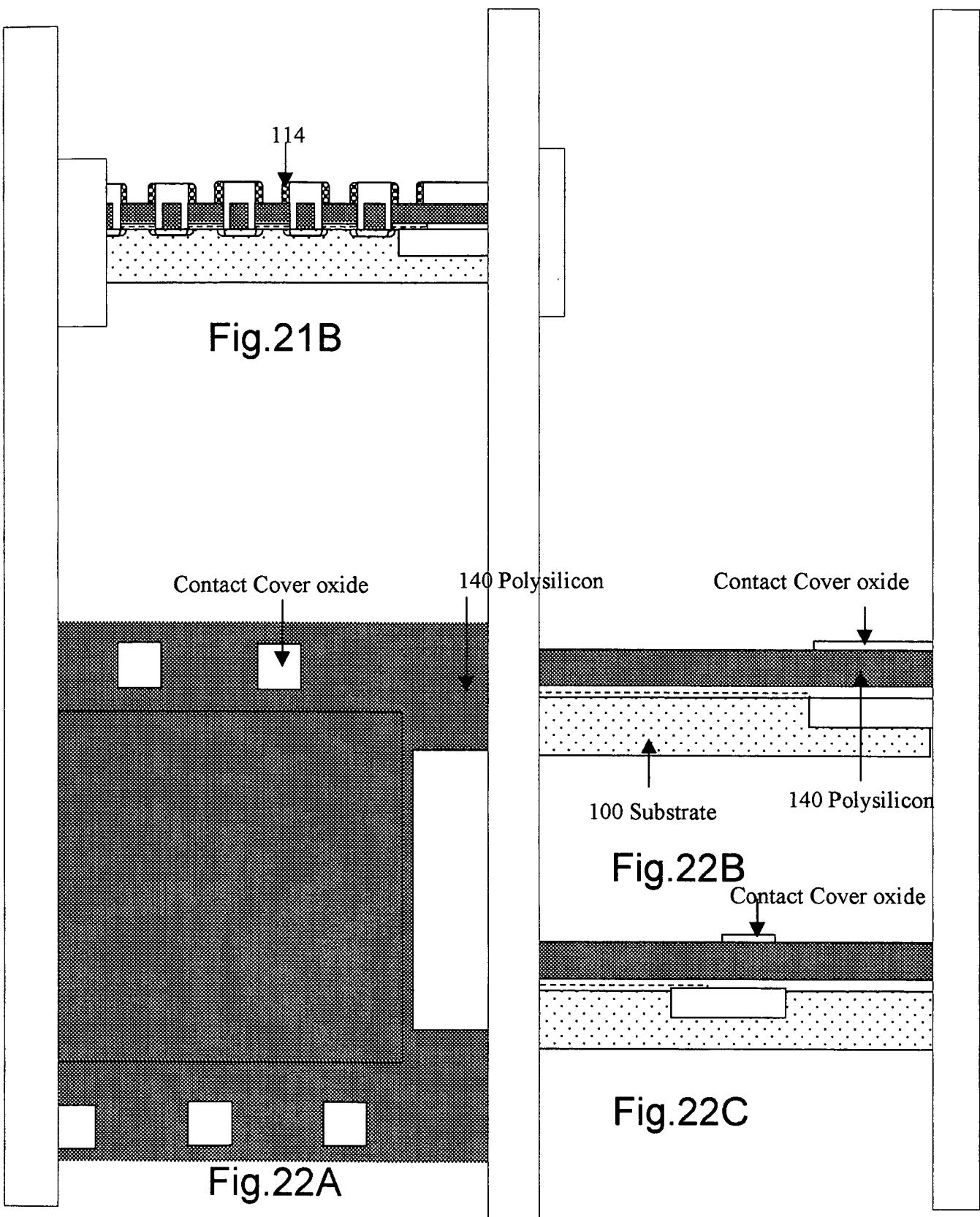
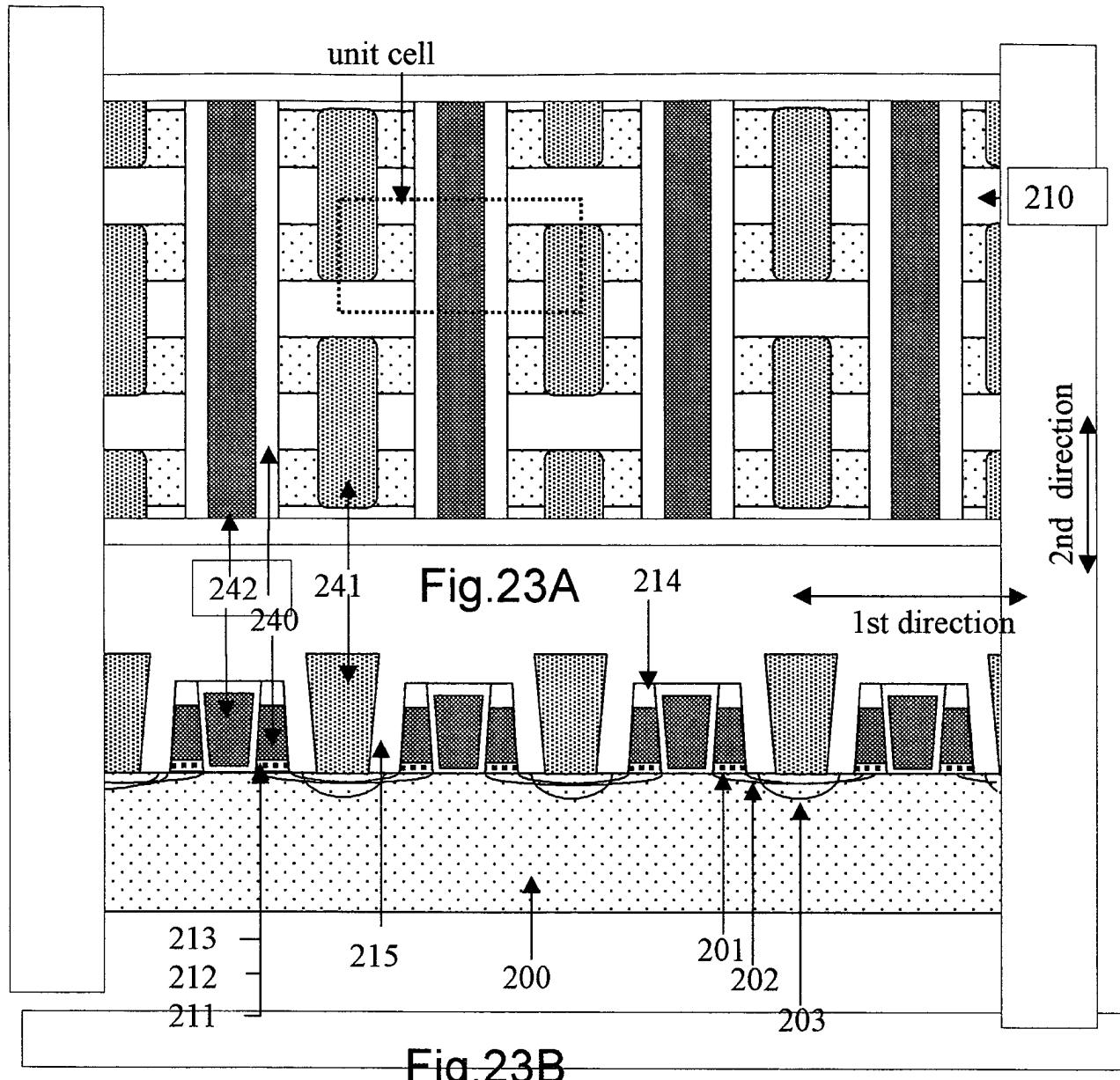
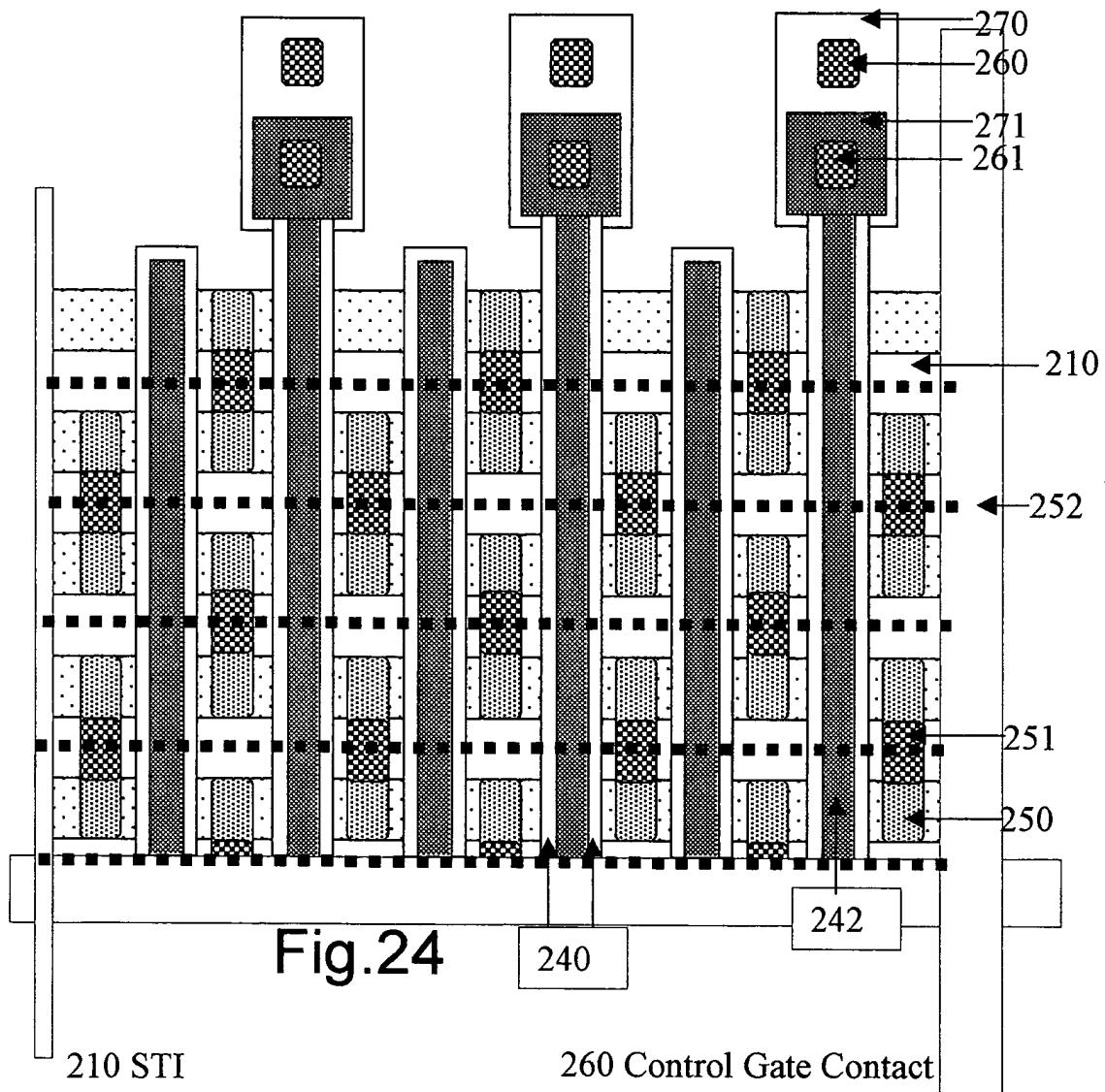


Fig.20C1





| | | |
|--------------------------|----------------------|--------------------------|
| 200 Substrate | 211 ONO Bottom oxide | 240 Control Gate Poly Si |
| 201 Control Gate Channel | 212 ONO Nitride | 241 Local wiring |
| 202 Memory LDD | 213 ONO Top oxide | 242 Word gate/Line |
| 203 Memory diffusion | 214 CG Oxide Mask | |
| | 215 Memory Spacer | |
| | 216 CG-WG isolation | |
| | 217 Word Gate Oxide | |
| | 218 Word cap oxide | |



210 STI

260 Control Gate Contact

240 Control Gate

261 Word Line Contact

242 Word Line

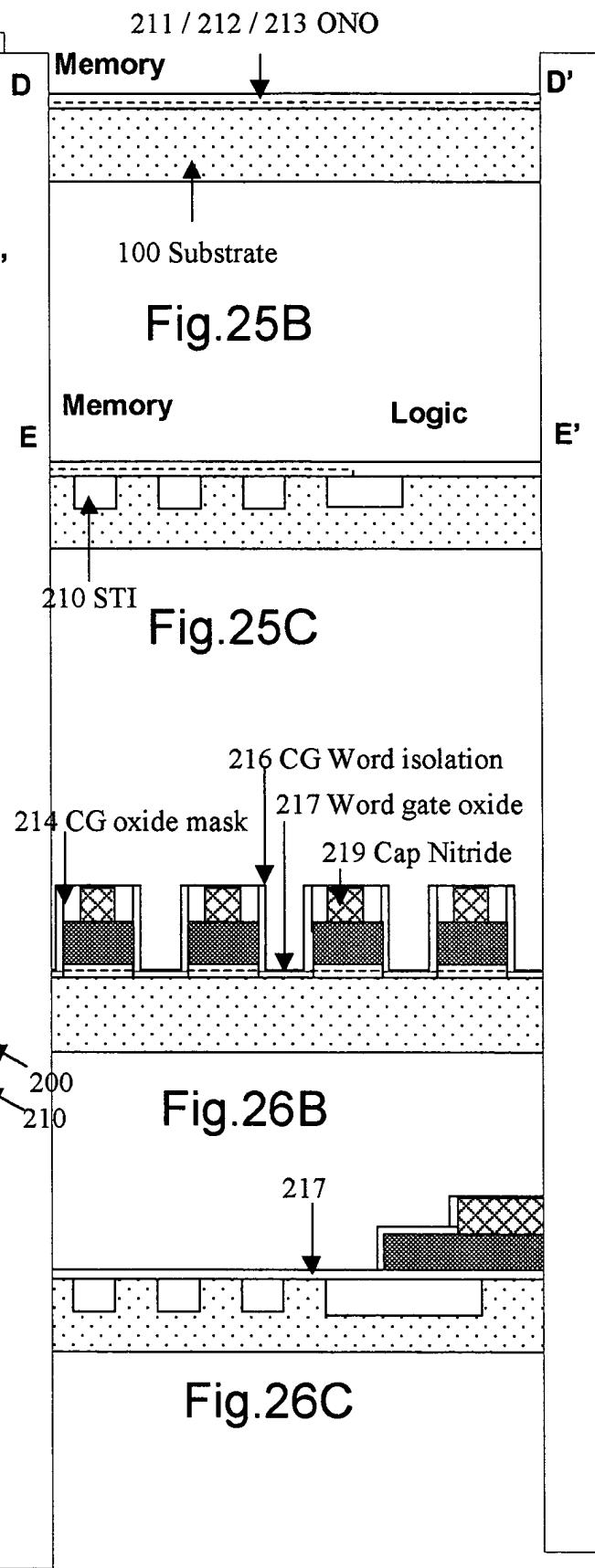
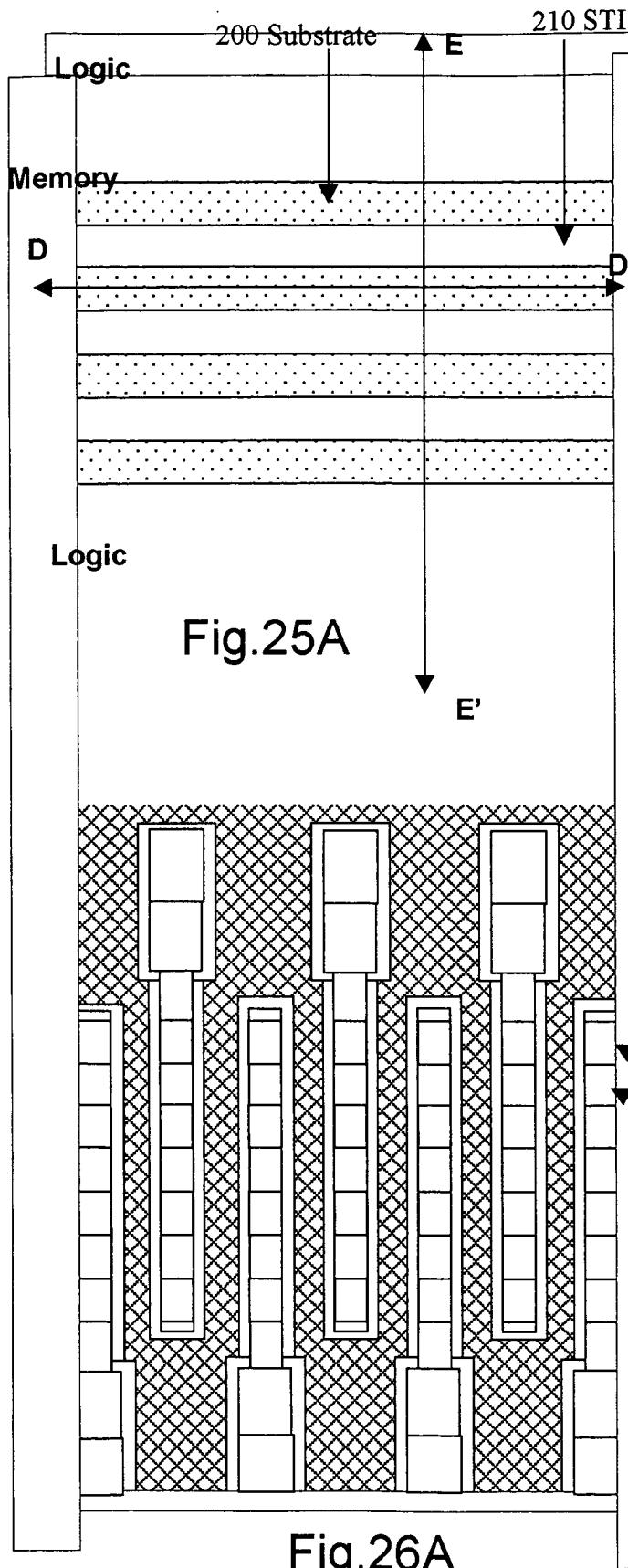
270 Control Gate Contact Cover

250 Local Wire (bit bridge)

271 Word line Contact Cover

251 Bit line Contact

252 Bit Line (1st Metal)



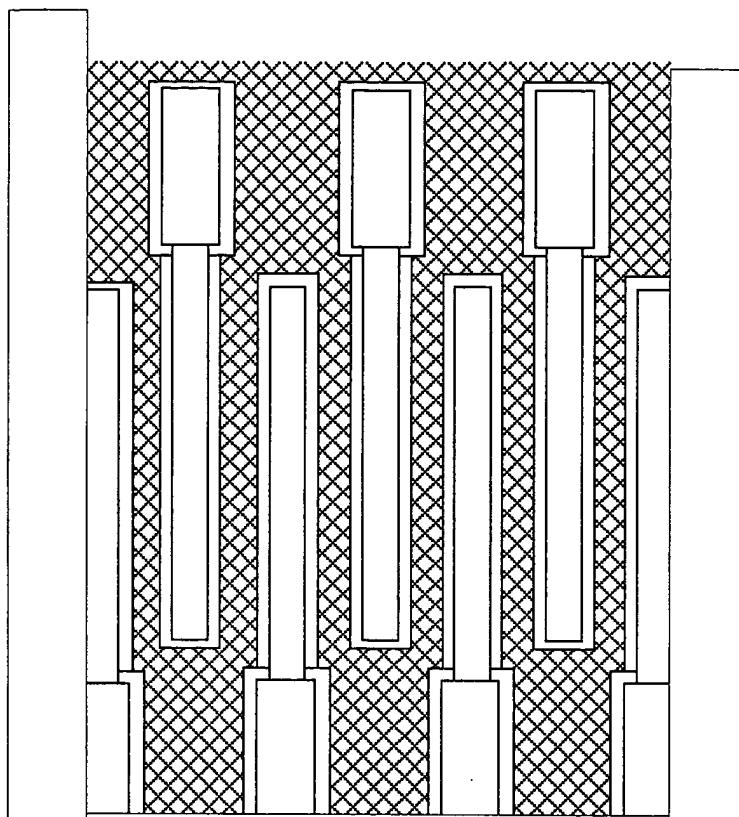


Fig.27A

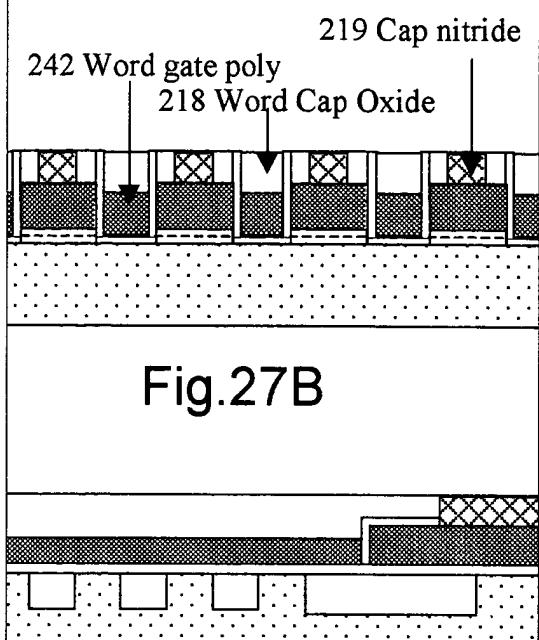


Fig.27B

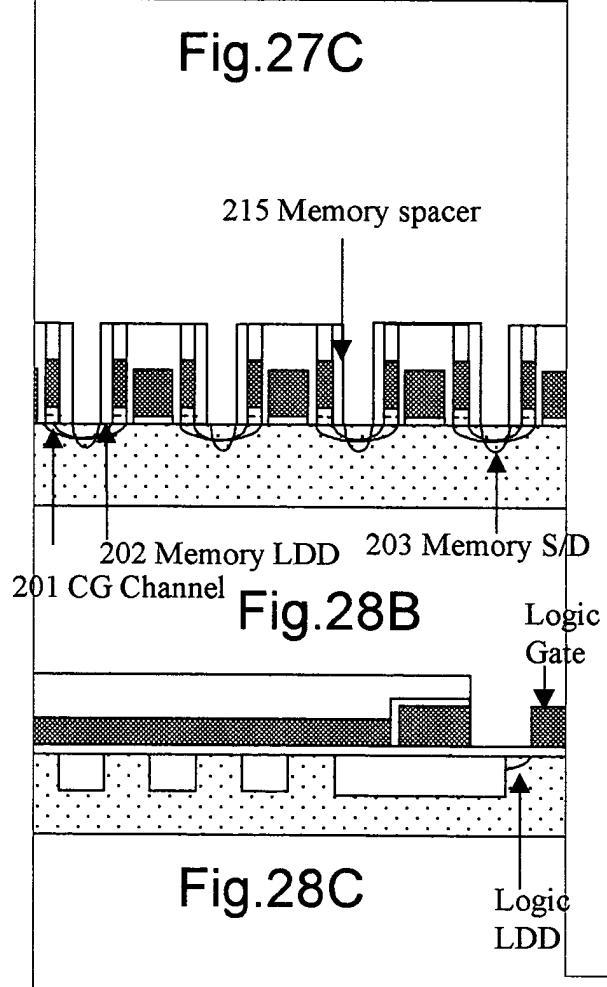


Fig.28B

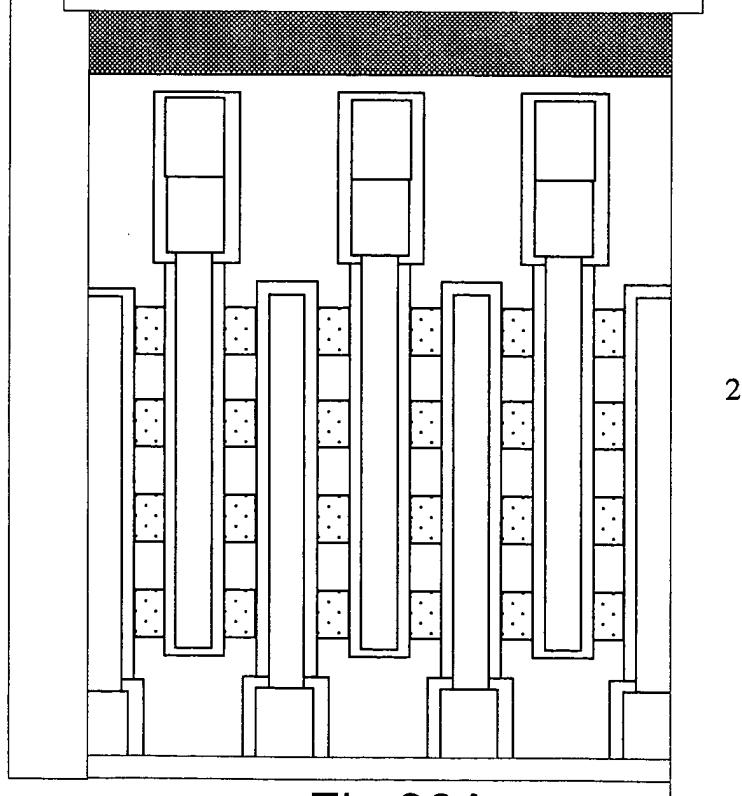
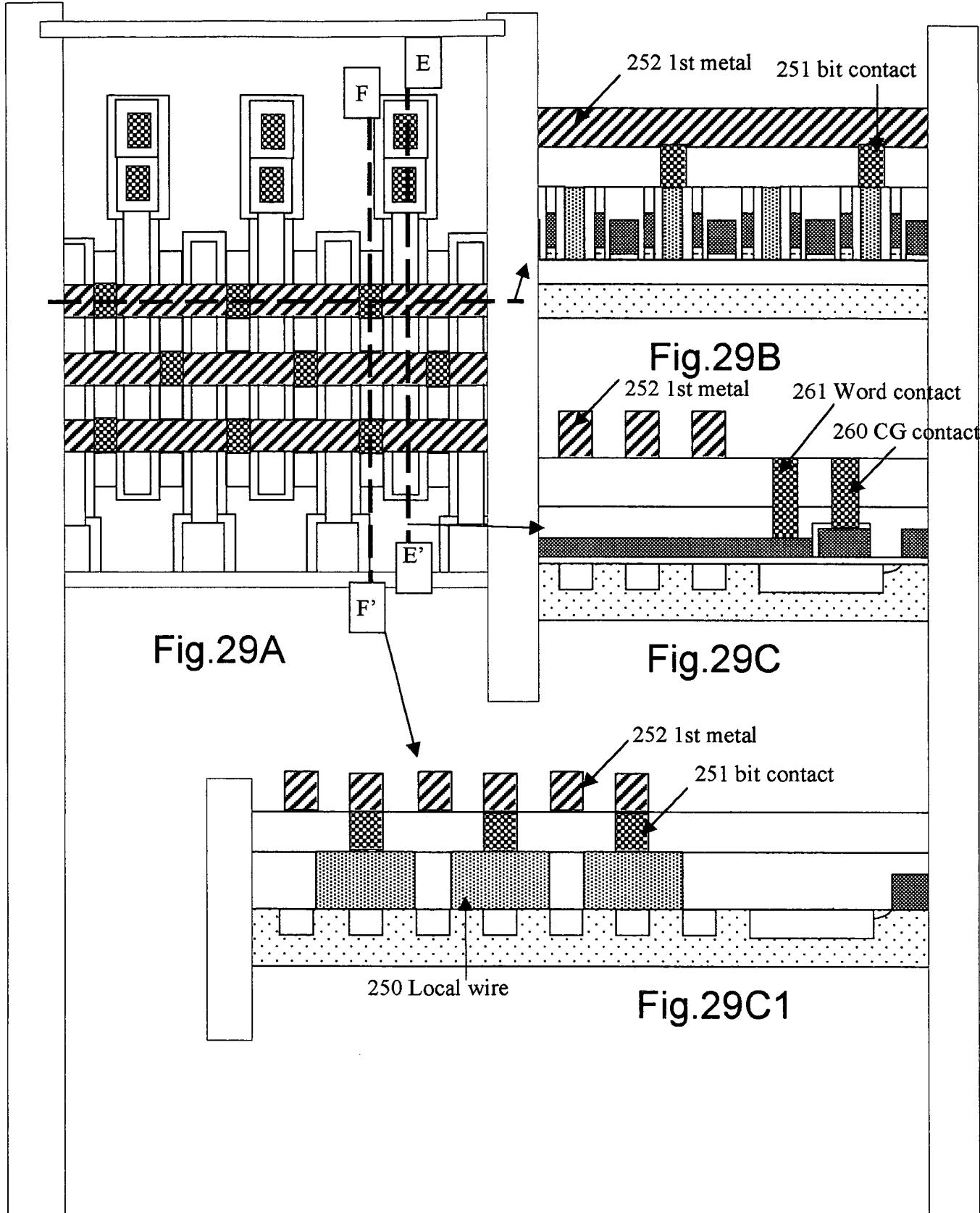
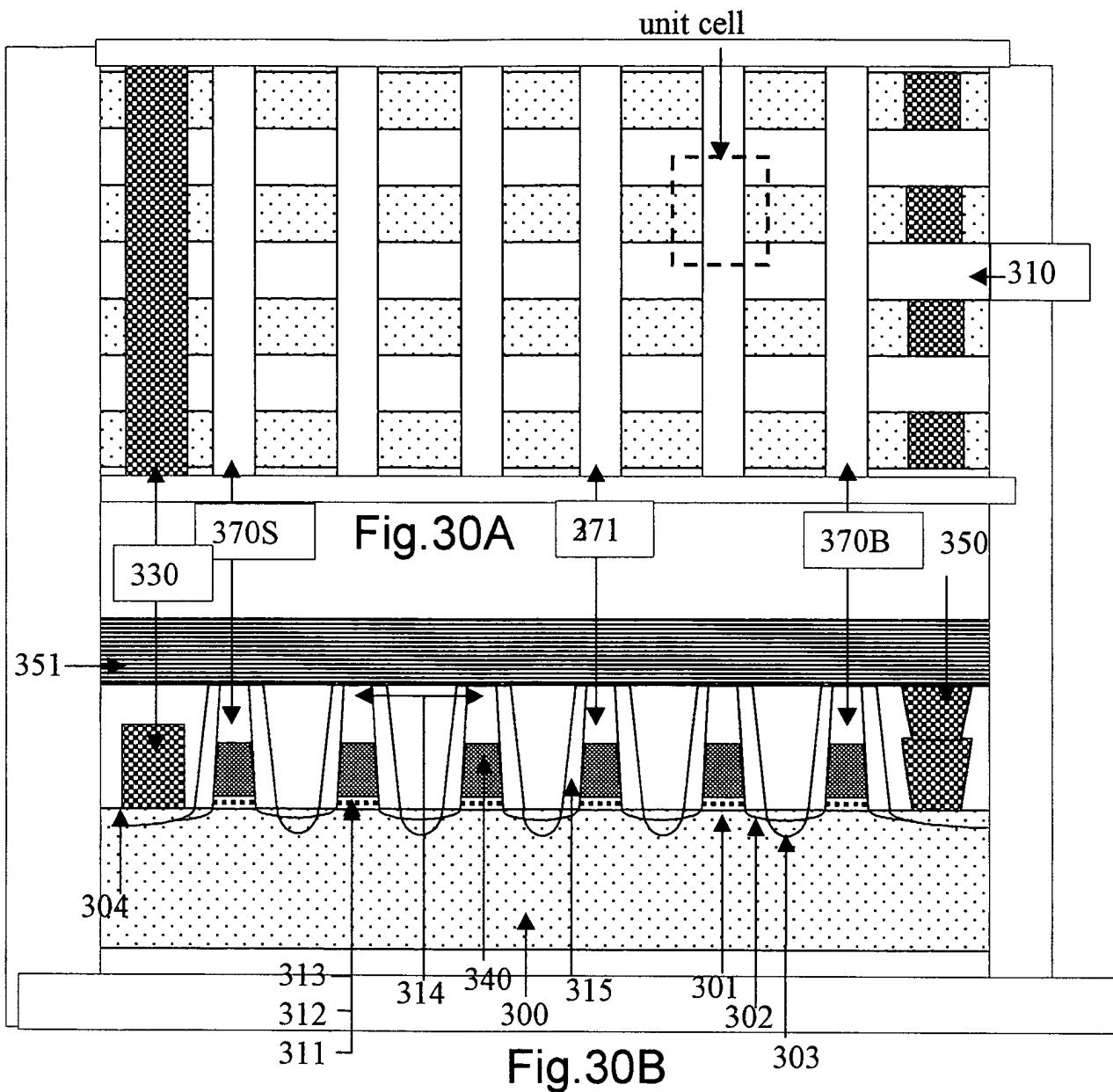


Fig.28A

Fig.28C





300 Substrate

310 STI

330 Local wiring

301 Control Gate Channel

311 ONO Bottom oxide

340 Control Gate Poly Si

302 Memory LDD

312 ONO Nitride

350 Bit Contact

303 Memory diffusion

313 ONO Top oxide

351 Bit Line (1st Metal)

304 Common Ground

314 CG Oxide Mask

370B Select Gate (Bit)

315 Memory Spacer

370S Select Gate (Source)

371 Control gate line

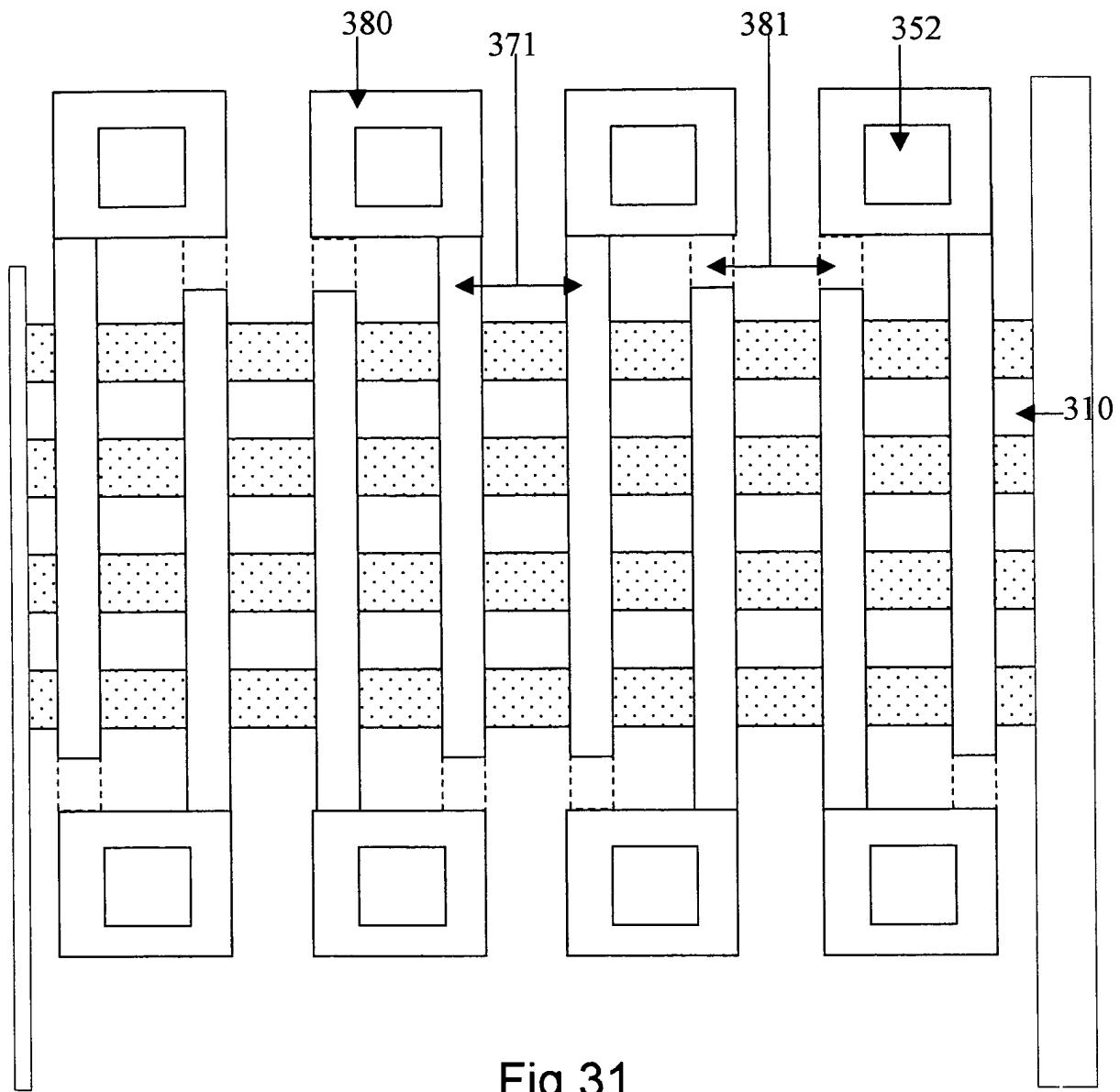


Fig.31

352 Control gate Contact

380 Control gate Contact Cover

381 Control gate Edge cut

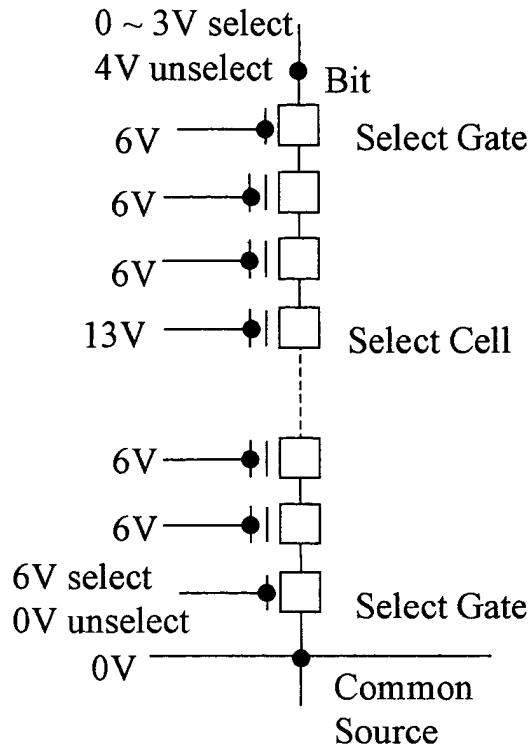


Fig.32A1

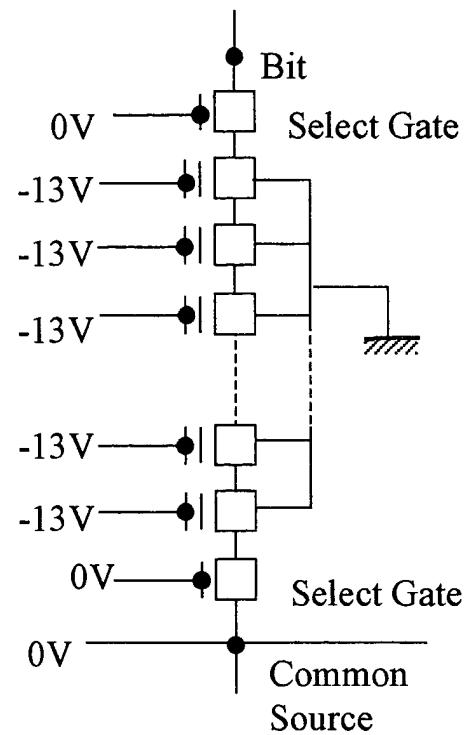


Fig.32A2

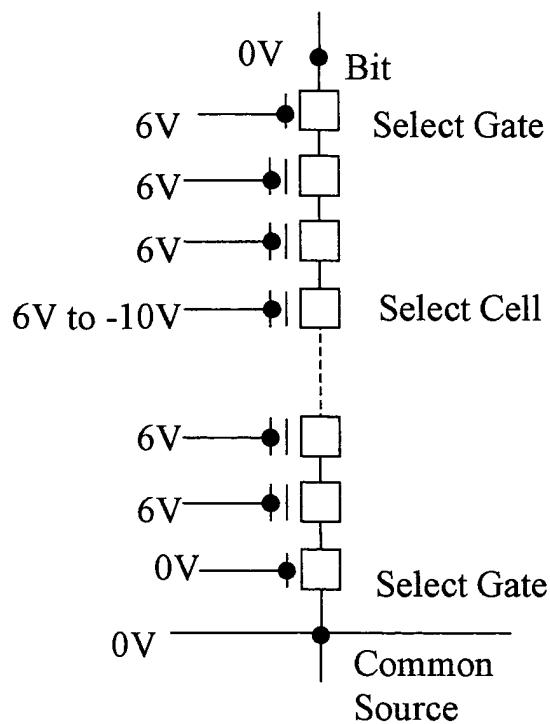


Fig.32B1

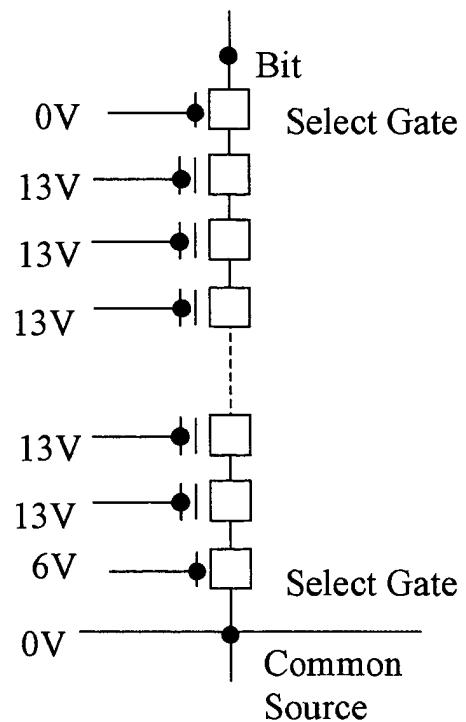


Fig.32B2

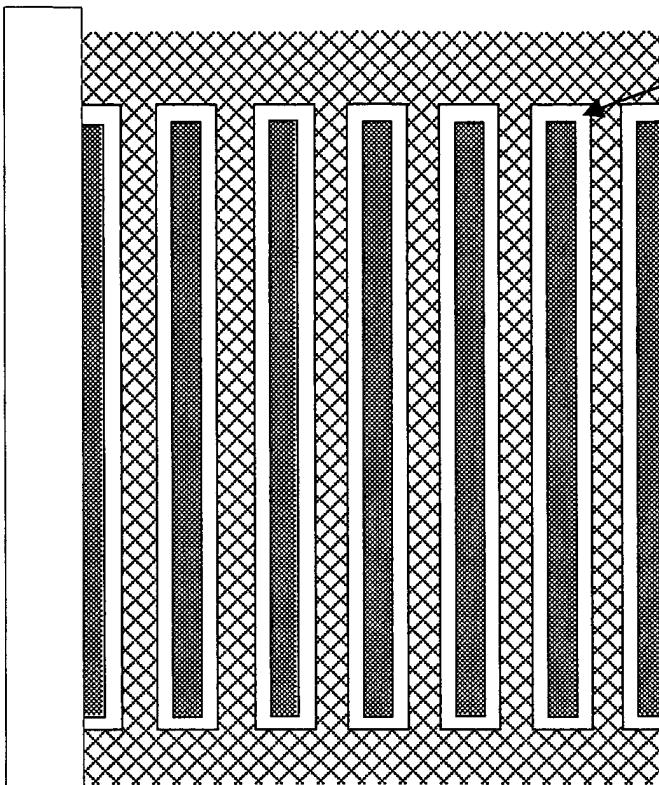


Fig.33A

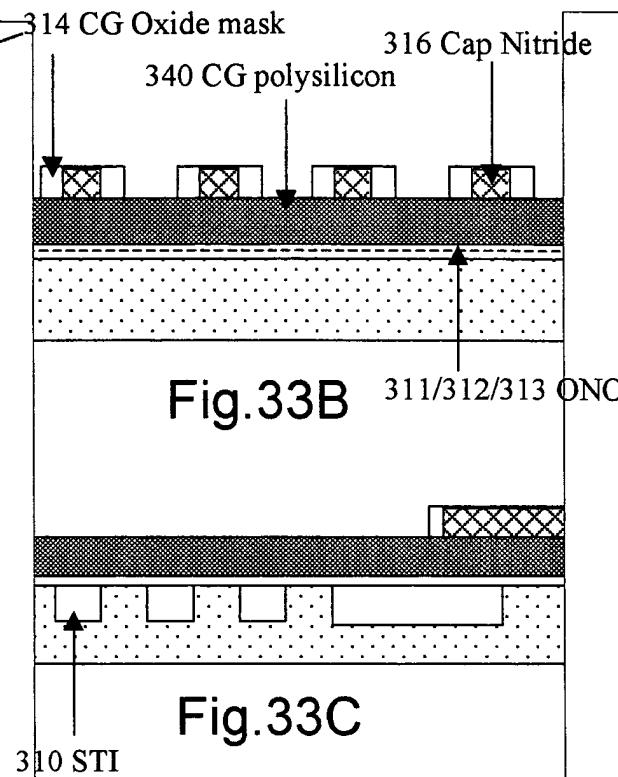


Fig.33C

314 CG Oxide mask

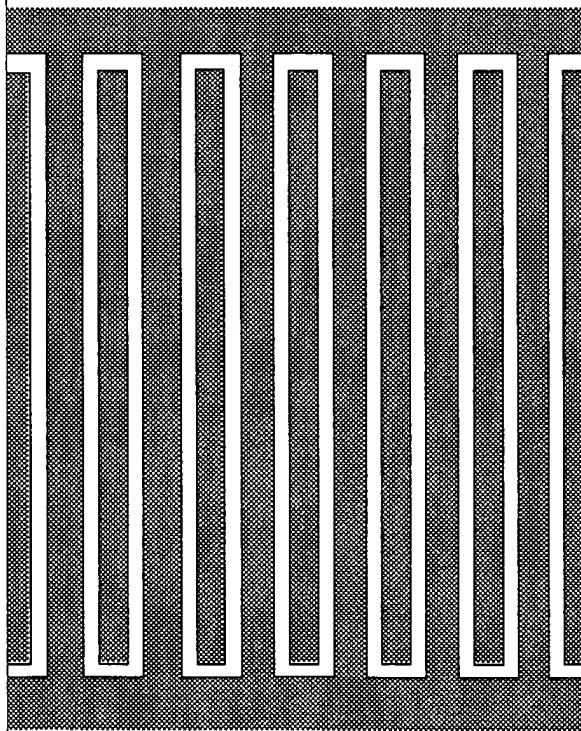


Fig.34A

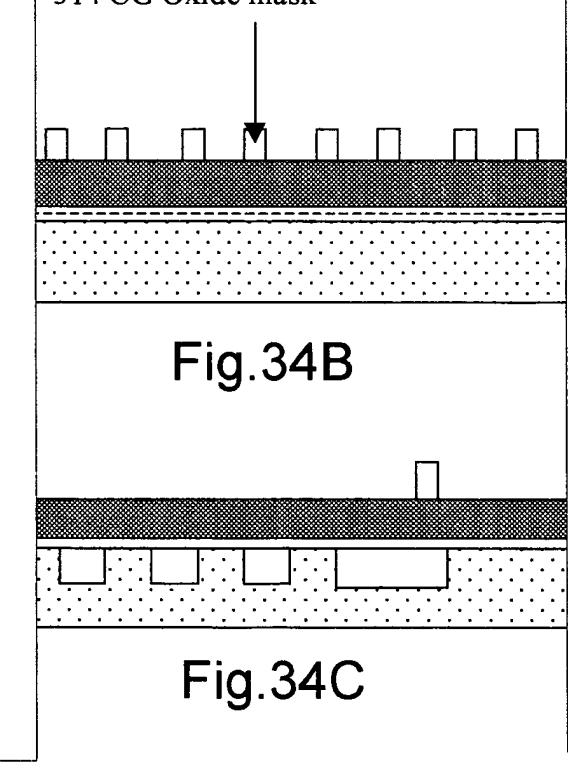
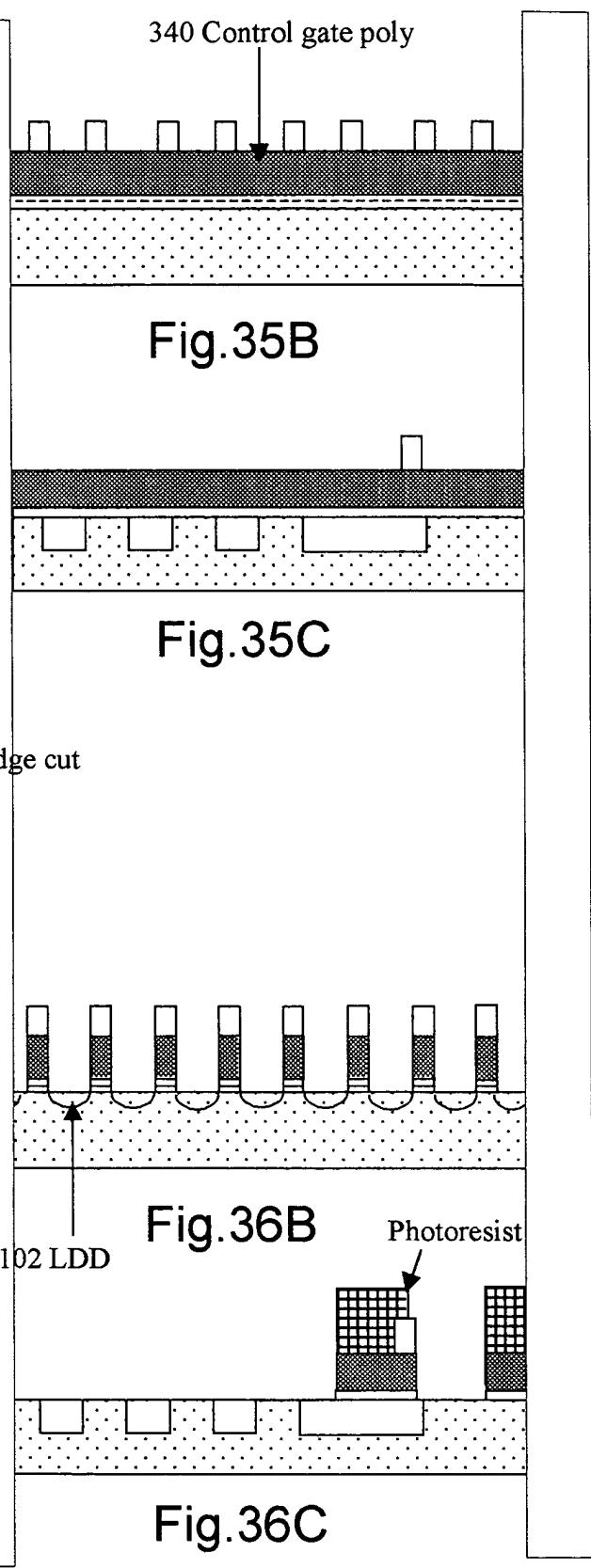
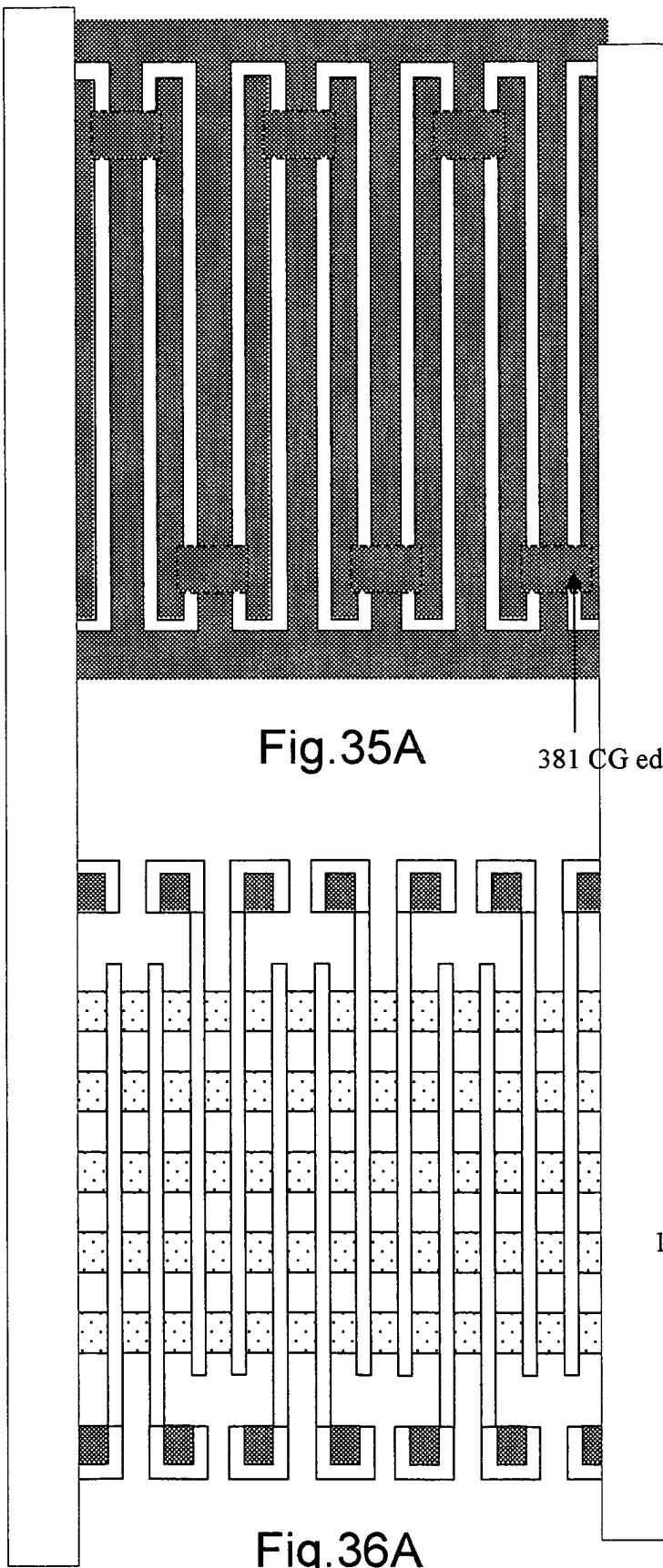


Fig.34C

Fig.33B 311/312/313 ONO



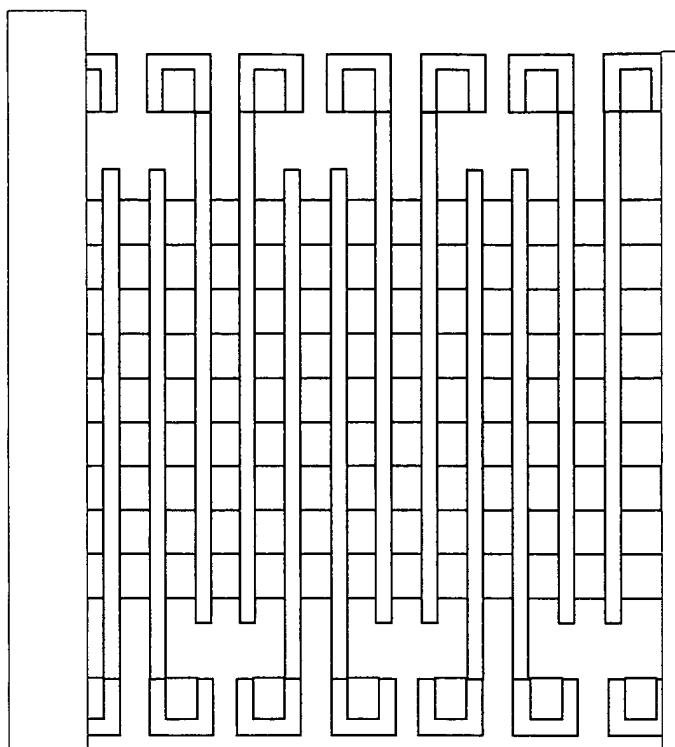


Fig.37A

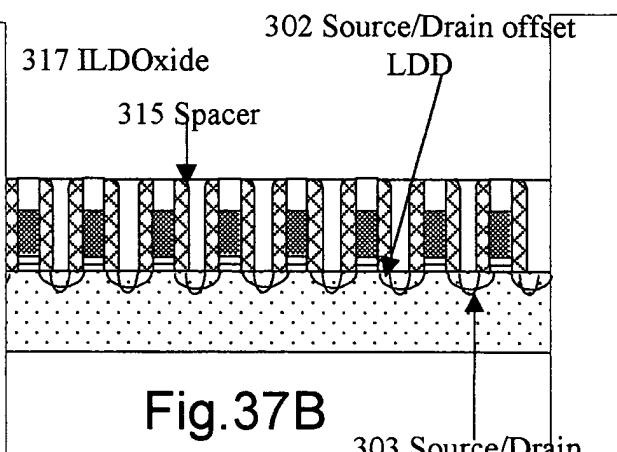


Fig.37B

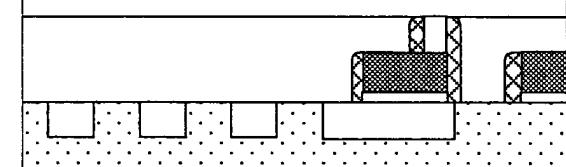


Fig.37C



Fig.38B

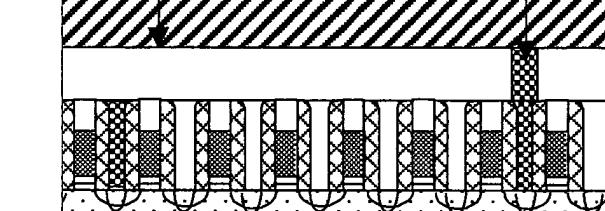


Fig.38C

330 Common Source Line

Fig.38A

360 Contro gate contact

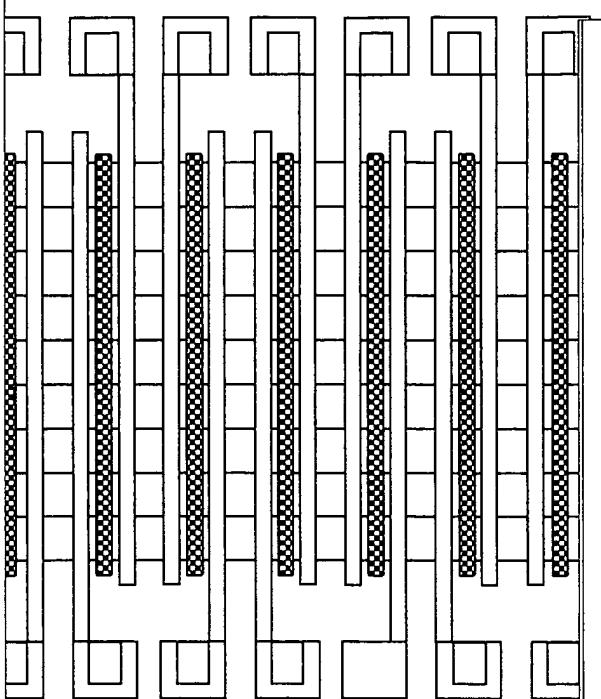


Fig.39A

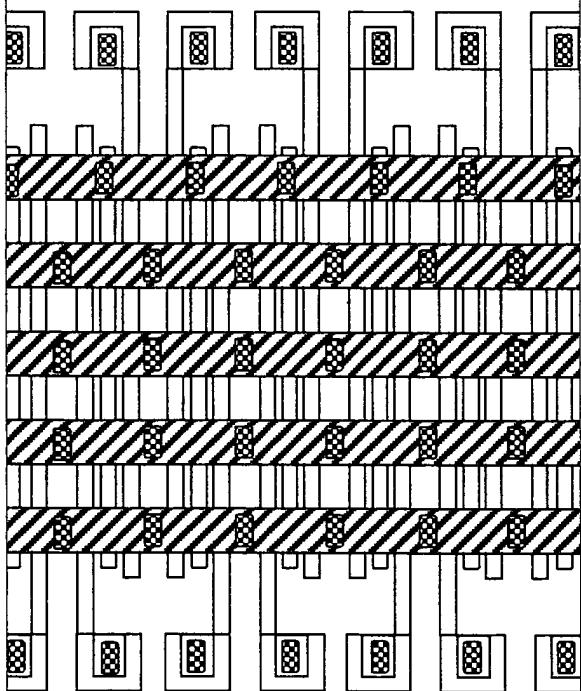


Fig.40A

Fig.39B

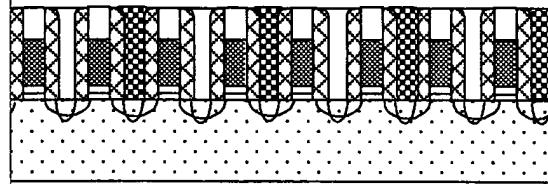


Fig.39C 319 oxide

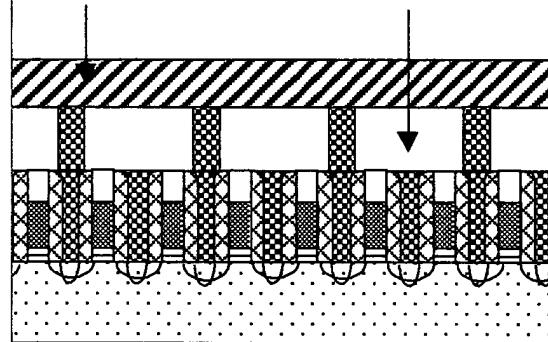


Fig.40B

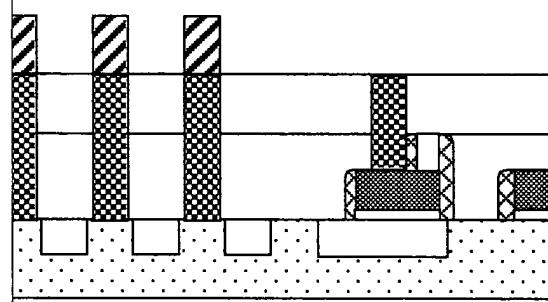
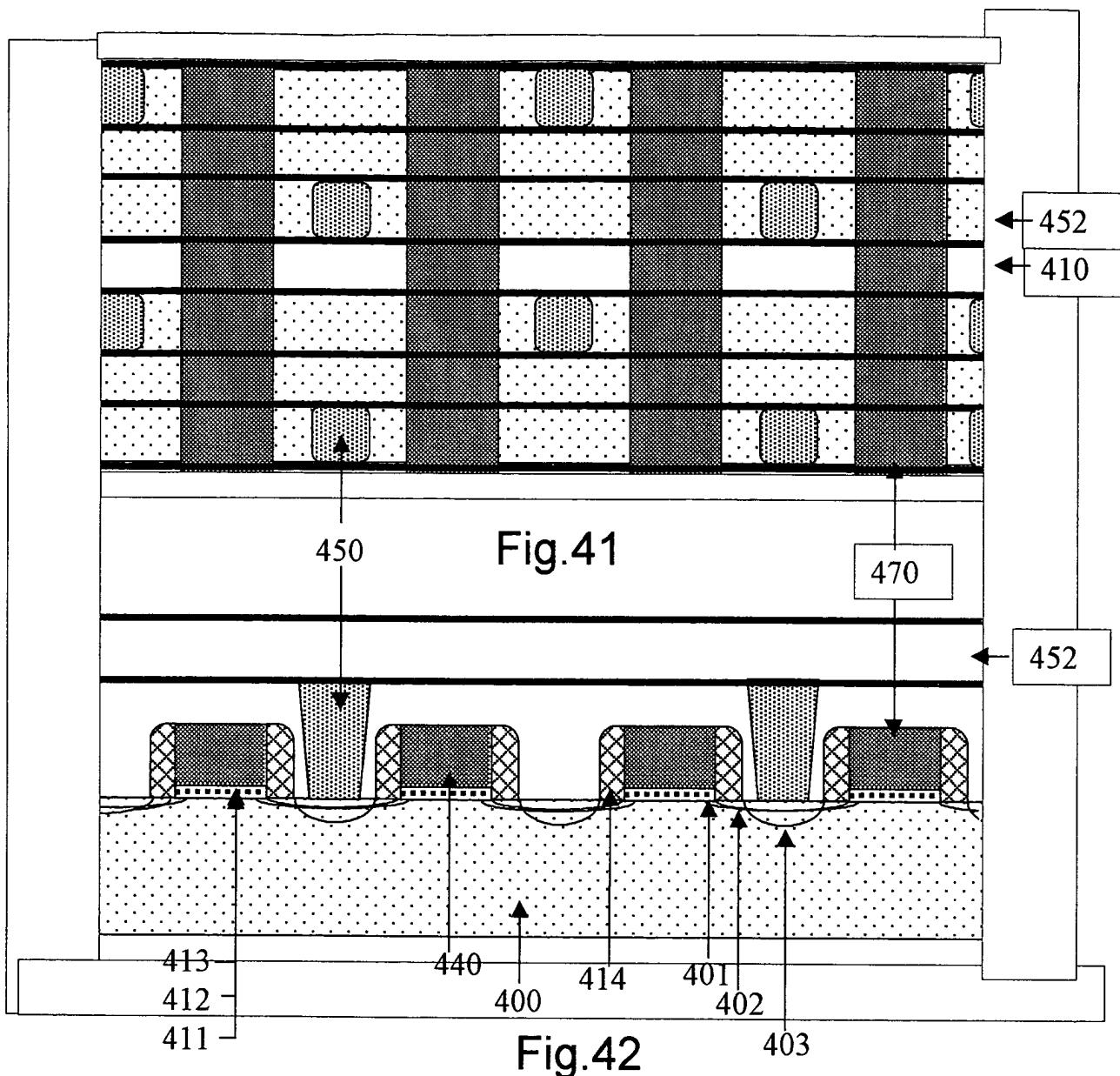


Fig.40C



400 Substrate

410 STI

440 Memory gate Si

401 Memory Halo

411 ONO Bottom oxide

450 Local wire (bit bridge)

402 Memory LDD

412 ONO Nitride

451 Bit contact

403 Memory diffusion

413 ONO Top oxide

452 Bit Line (1sr metal)

415 Memory Spacer

470 Word Line

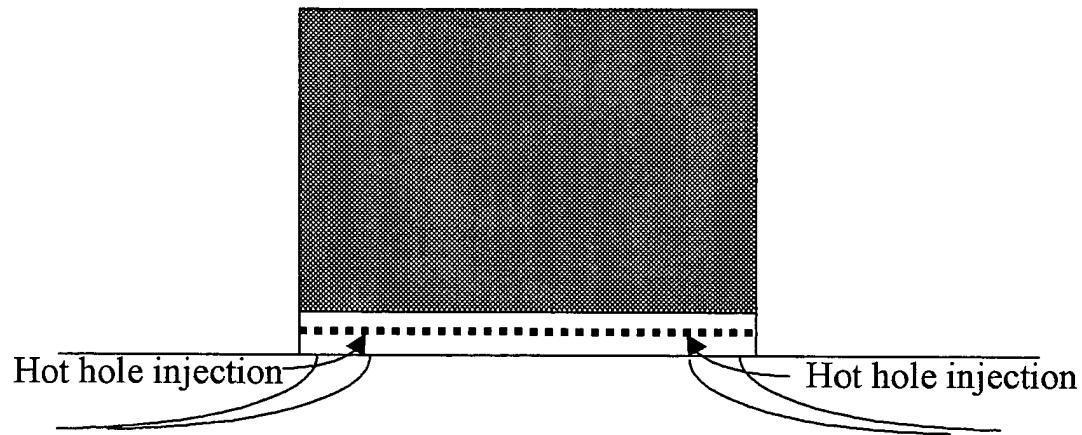


Fig.43

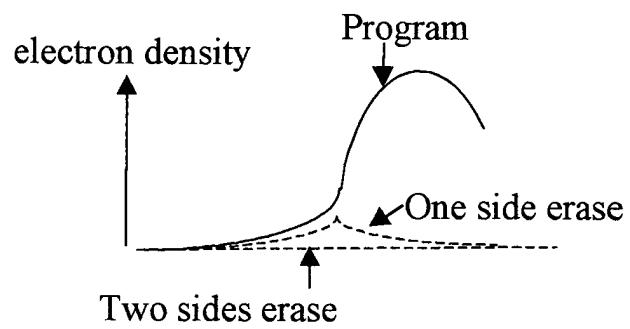


Fig.44